ATTACHMENT J1

Arnold AFB Electric Distribution System

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J1.1 Arnold AFB Overview

Arnold Air Force Base (AFB) is located in middle Tennessee, 72 miles southeast of Nashville and 61 miles northwest of Chattanooga at exit 117 off Interstate Highway 24. Arnold AFB covers approximately 40,000 acres, straddling Coffee and Franklin counties and situated in the tri-city triangle composed of Tullahoma, Manchester, and Winchester, Tennessee.

The Arnold Engineering Development Center (AEDC) is a 4,000 acre industrial aerospace test facility located within Arnold AFB. It is not a typical military installation. The Center and its mission are unlike that of any other facility in the United States. It is perhaps the largest, most diverse aerospace testing and flight simulation facility in the world. The facility includes its own 4,000-acre lake to supply water to the Center's testing facilities.

Another unique element of the Center is workforce. Unlike most military installations, AEDC is Government managed and Contractor operated and maintained. In Oct 2003, the Government awarded a competitive, 12-year award-term, integrated Operations, Maintenance and Information Management support contract to Aerospace Testing Alliance (ATA), hereafter referred to as the Mission Support Contractor. The scope of this contract ranges from aerospace test planning, test cell, plant and facility maintenance and support functions such as civil engineering, security and fire protection to information management. Utility operation and maintenance and some repair projects are performed by the Mission Support Contractor. Other maintenance and repair efforts are competitively contracted by the Government with project management, access and check-out performed by the Mission Support Contractor. Integration between the test cells, plants, utilities and utility suppliers is highly complex and requires real-time decision making to support dynamic test mission requirements.

AEDC's primary mission is the development and testing of aerospace systems. The test mission is divided between three primary business areas: aerodynamics, aeropropulsion, and space and missiles. Wind tunnels and computational modeling are used to support the aerodynamic test mission. There are two 16-foot wind tunnels, one 4-foot tunnel, and three hypersonic tunnels used to test a full range of articles, including full-scale aircraft, spacecraft and rockets, as well as bombs, fuel tanks and other separation ordnance and externally deployed stores. The aeropropulsion facilities enable AEDC to test engines through their entire operational envelope – takeoff through climb to altitude, and in combat and performance maneuvers. The space and missiles facilities enable AEDC to test articles in specialized conditions, such as at sea level or at altitudes exceeding 300 miles above sea level, as well as through extreme performance – subsonic to well past Mach 20. Overall, the Center is capable of delivering a full spectrum of aerospace test support to its customers, which include military and private sector companies.

AEDC consumes vast quantities of energy and water to support its test missions. Its utility requirements differ dramatically from typical military installations, both in the amount of

the commodity used and the fluctuations in use. The consumption, demand, and fluctuation in use of electricity, water, and natural gas dictate a high degree of integration between the government and its contractors and between the Center and its utility providers. Utilities play a major role in the tactical and strategic execution of AEDC's mission.

While the Center does not have an active flying mission, it does have a single runway along the western edge of the Base that runs northeast to southwest. There are also 687 facilities and 329 buildings on AEDC, totaling approximately 2.8 million square feet. The distribution of facility space is approximately 79 percent industrial, 13 percent administrative, 6 percent laboratories, and 2 percent residential, primarily military family housing (MFH).

Tenant organizations are also located at Arnold AFB. The largest tenant is the Tennessee Army National Guard (TNARNG). The TNARNG conducts training activities, such as a small-arms firing range and tank maneuver area, on approximately 6,700 acres. An integral component of AEDC, although not considered a tenant, is the Naval Air Warfare Center Aircraft Division, which oversees naval testing at AEDC. Other tenants include:

- Air Force Office of Special Investigations
- Army and Air Force Exchange Services
- Detachment 2, Research and Acquisition Communications Division
- Detachment 36, Management Engineering Team, Squadron Manpower and Organization
- Defense Commissary Agency
- Defense Contract Audit Agency
- Defense Investigative Service

J1.2 Electric Distribution System Description

J1.2.1 Electric Distribution System Fixed Equipment Inventory

The Arnold AFB electric distribution system consists of all appurtenances physically connected to the distribution system from the point the distribution system enters the Installation (where Government ownership currently starts) to the point of demarcation, defined by Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas. The system may include, but is not limited to, transformers, circuits, protective devices, utility poles, ductbanks, switches, street lighting fixtures, and other ancillary fixed equipment. The actual inventory of items sold will be in the bill of sale at the time the system is transferred. The following description and inventory is included to provide the Utilities Privatization (UP) Contractor with a general understanding of the size and configuration of the distribution system.

Specifically excluded from the electric distribution system privatization are:

- Traffic lights.
- Security, Parking, and recreational lights that are mounted directly on buildings.

- Security, Parking, and recreational lights that are fed directly from buildings.
- Airfield lighting, airfield lighting vaults and all associated equipment.
- Transmission lines and substations on DoD property that are owned and maintained by Tennessee Valley Authority (TVA), the Tullahoma Utility Board (TUB) and the Duck River Electric Membership Corporation (Duck River) and are used to supply power to Arnold AFB or cross Arnold AFB to supply power to surrounding areas. The transmission lines include approximately 50 miles of three-phased circuit, with high tension transmission towers for the 161/500kV circuits, and standard utility poles for the 4.4, 4.6, and 26 kV circuits.

J1.2.1.1 Description

The Tennessee Valley Authority (TVA), the Tullahoma Utility Board (TUB) and the Duck River Electric Membership Corporation (Duck River) supply power to Arnold AFB. The TVA provides power to the main industrial area. The TUB supplies electric service in the westernmost portion of the Center, including the golf course, tennis courts, shooting range, and Tennessee Army National Guard area. Duck River provides electric service to operate equipment for the Elk River Dam.

TVA supplies power to Arnold AFB through two 161-kilovolt (kV) transmission circuits into the Center-owned switchyard. The switchyard contains incoming transmission structures, 161-kV air switches, 161-kV circuit breakers, two 161-kV power transformers, two 13.8-kV metal-enclosed switchgear, connecting bus and cables, and power control building. TVA's two 161-kV lines feed a main and transfer bus scheme in the 161-kV switchyard. This scheme is composed of 161-kV circuit breakers, air break switches, and bus, as well as associated lattice dead-end structure and bus-support structures.

From the main 161-kV switchyard, power is distributed about the Center at predominantly two voltage levels: 161 kV and 13.8 kV. The 161-kV distribution system supplies power to substations at each test facility via underground oil-insulated circuits equipped with cathodic protection. Above and underground circuits compose approximately 100 circuit miles, 3.6 of which are located in the Arnold Village family housing area.

Substations at the test facilities have transformers, circuit switchers, breakers, and relay/control rooms (pilot wire rooms, most of which are located within AEDC test facility buildings). The UP Contractor shall own, maintain, and operate pilot wire rooms at each 161 KV substation. This shall include all control wire from the substations to the pilot wire rooms, including SCADA equipment.

The transformers range in size from 20 megavolt amperes (MVA) to 83.3 MVA. Power transformers at each test facility step down 161 kV to 13.8 kV, 6.9 kV, or 4.16-kV, depending on equipment requirements. Although the 161-kV feeder lines are configured in a loop, the system operates in a completely radial mode because of the current system protection scheme.

J1.2.1.2 Inventory

Table 1 provides a general listing of the major electric distribution system fixed assets for the Arnold AFB electric distribution system included in the sale.

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Main Base				
Substations - Main				
Transformers, 2 EA @ 50000kVA	50000 kVA	100	MVA	1995
Oil Circuit Breakers	2,000 amp	4	ea	1975
SF6 Circuit Breakers	2,000 amp	3	ea	1985
SF6 Circuit Breakers	2,000 amp	6	ea	1995
Disconnect Switches	161 kV	41	ea	1955
CTs	161 kV	6	ea	1955
Potential Transformer	115/66.4 V	11	ea	1955
Insulators	161 kV	81	ea	1955
Insulator Bus Supports	161 kV	81	ea	1955
Cable Terminators (Oil Filled)	161 kV	9	ea	1955
Cable Terminators (Oil Filled)	161 kV	12	ea	1979
Lightning Arrestors	145 kV	21	ea	1955
4" Alum Bus		4,320	lf	1955
2" Alum Bus		1,560	lf	1955
Breaker Bays	36' x 36'	13	ea	1955
Disconnect Switch Support Structure	161 kV	6	ea	1955
Yard size	600' x 318'	190,800	sf	1955
Yard Grounding		19,080	lf	1955
Yard Fencing		1,836	lf	1955
Yard Crushed Gravel		3,533	cy	1955
Yard Lighting		24	ea	1955
Lighting Poles - Steel	75'	4	ea	1955
Block building	20' X 24'	1	ea	1955
Oil Pump System		1	ea	1995
Oil Storage Tank	4000 gal.	1	ea	2002
Oil Tank concrete Pad	8' X 20' X 1.3'	8	cy	2002
Substation - ETF # 7				
Transformers, 1 @ 83333kVA	83333 kVA	83	MVA	1995
Insulators	161 kV	12	ea	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Cable Terminators (Oil Filled)	161 kV	3	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		240	lf	1955
Breaker Bays	36' x 36'	1	ea	1955
Yard size	90' x 90'	8,100	sf	1955
Yard Grounding		810	lf	1955
Yard Fencing		360	lf	1955
Yard Crushed Gravel		150	cy	1955
Yard Lighting		8	ea	1955
Substation - ETF # 2				
Transformers, 1 @ 50000kVA	50000 kVA	50	MVA	1955
SF6 Circuit Breakers	2,000 amp	2	ea	1985
Disconnect Switches	161 kV	4	ea	1955
Grounding Switch		1	ea	1955
Insulators	161 kV	15	ea	1955
Cable Terminators (Oil Filled)	161 kV	9	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		420	lf	1955
Breaker Bays	36' x 36'	2	ea	1955
Pilot Wire Room (3 B-B Panels)	24' x 30'	720	sf	1955
Relay Control Panels in Pilot Room (3 B-B)		6	ea	1955
Yard size	160' x 130'	20,800	sf	1955
Yard Grounding		2,080	lf	1955
Yard Fencing		580	lf	1955
Yard Crushed Gravel		385	cy	1955
Yard Lighting		13	ea	1955
Substation - PWT				
Transformers 2 EA @ 66000kVA	66000 kVA	132	MVA	1955
Transformers 1 EA @ 62500kVA	62500 kVA	63	MVA	1995
Transformers 2 EA @ 64000kVA	64000kVA	128	MVA	2003

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
SF6 Circuit Breakers	2,000 amp	2	ea	2003
Disconnect Switches	161 kV	7	ea	1955
Grounding Switch		4	ea	1955
Insulators	161 kV	30	ea	1955
Cable Terminators (Oil Filled)	161 kV	9	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		1,050	lf	1955
Breaker Bays	36' x 36'	5	ea	1955
Pilot Wire Room (7 B-B Panels)	33' x 15'	495	sf	1955
Relay Control Panels in Pilot Room (7 B-B)		14	ea	1955
Yard size	280' x 140'	39,200	sf	1955
Yard Grounding		3,920	lf	1955
Yard Fencing		840	lf	1955
Yard Crushed Gravel		725	cy	1955
Yard Lighting		16	ea	1955
Circuit Switchers	161 kV	1	ea	2003
Main Power transformer	64 MVA	64	MVA	2003
Transformer, PT	15 kV	7	ea	2003
Substation - VKF				
Transformers 2 EA @ 33,333kVA	33,333 kVA	67	MVA	1955
Transformers 1 EA @ 50,000kVA	50,000 kVA	50	MVA	1995
Disconnect Switches	161 kV	5	ea	1955
Grounding Switch		3	ea	1955
Insulators	161 kV	15	ea	1955
Cable Terminators (Oil Filled)	161 kV	9	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		795	lf	1955
Breaker Bays	36' x 36'	3	ea	1955
Pilot Wire Room (7 B-B Panels)	24' x 27'	648	sf	1955
Relay Control Panels in Pilot Room (7 B-B)		14	ea	1955
Yard size	180' x 100'	18,000	sf	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Yard Grounding		1,800	lf	1955
Yard Fencing		560	lf	1955
Yard Crushed Gravel		333	cy	1955
Yard Lighting		16	ea	1955
Substation - PES				
Transformers 2 EA @ 53250kVA	53250 kVA	107	MVA	1955
Transformers 2 EA @ 20000kVA	20000 kVA	40	MVA	1955
Transformers 1 EA @ 192.258MVA	192.258MVA	192	MVA	2001
Transformers 1 EA @ 30000kVA	30000 kVA	30	MVA	1995
Circuit Switchers	1,200 amp	6	ea	1995
Disconnect Switches	161 kV	6	ea	1955
Disconnect Switches	161 kV	1	ea	1995
Disconnect Switches	161 kV	1	ea	2001
Grounding Switch		1	ea	1955
Insulators	161 kV	27	ea	1955
Cable Terminators (Oil Filled)	161 kV	6	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		960	lf	1955
Breaker Bays	36' x 36'	5	ea	1955
Pilot Wire Room (7 B-B Panels)	25' x 15'	375	sf	1955
Relay Control Panels in Pilot Room (7 B-B)		14	ea	1955
Yard size (L shaped)	240' x 120'	32,300	sf	1955
Yard Grounding		3,230	lf	1955
Yard Fencing		860	lf	1955
Yard Crushed Gravel		598	cy	1955
Yard Lighting		12	ea	1955
Substation - ETF # 1				
Transformers 2 EA @ 35000kVA	35000 kVA	70	MVA	1955
Transformers 1 EA @ 30000kVA	30000 kVA	30	MVA	1955
SF6 Circuit Breakers	2,000 amp	1	ea	1995

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Disconnect Switches	161 kV	5	ea	1955
Grounding Switch		3	ea	1955
Insulators	161 kV	18	ea	1955
Cable Terminators (Oil Filled)	161 kV	6	ea	1955
Lightning Arrestors	145 kV	3	ea	1955
4" Alum Bus		675	lf	1955
Breaker Bays	36' x 36'	3	ea	1955
Pilot Wire Room (4 B-B Panels)	31' x 15'	465	sf	1955
Relay Control Panels in Pilot Room (4 B-B)		8	ea	1955
Yard size	110' x 210'	23,100	sf	1955
Yard Grounding		2,310	lf	1955
Yard Fencing		640	lf	1955
Yard Crushed Gravel		428	cy	1955
Yard Lighting		16	ea	1955
Substations - ASTF Exhaust				
Transformers 2 EA @ 83300kVA	83300 kVA	167	MVA	1979
Transformers 2 EA @ 66666kVA	66666 kVA	133	MVA	1979
Transformers 1 EA @ 50000kVA	50000 kVA	50	MVA	1979
Transformers 1 EA @ 41666kVA	41666 kVA	42	MVA	1979
Disconnect Switches	161 kV	9	ea	1979
Insulators	161 kV	52	ea	1979
Insulator Bus Supports	161 kV	52	ea	1979
Cable Terminators (Oil Filled)	161 kV	6	ea	1979
Lightning Arrestors	145 kV	9	ea	1979
4" Alum Bus		324	lf	1979
2" Alum Bus		360	lf	1979
Disconnect Switch Support Structure	161 kV	9	ea	1979
Pilot Wire Room (9 B-B Panels)	18' x 38'	684	sf	1979
Relay Control Panels in Pilot Room (9 B-B)		18	ea	1979
Yard size	430' x 120'	51,600	sf	1979
Yard Grounding		5,160	lf	1979

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Yard Fencing		1,100	lf	1979
Yard Crushed Gravel		956	cy	1979
Yard Lighting		7	ea	1979
Lighting Poles - Steel	75'	6	ea	1979
Substations - ASTF Air				
Transformers 2 EA @ 83300kVA	83300 kVA	167	MVA	1979
Transformers 1 EA @ 58300kVA	58300 kVA	58	MVA	1979
Transformers 1 EA @ 39500kVA	39500 kVA	40	MVA	1979
Disconnect Switches	161 kV	6	ea	1979
Insulators	161 kV	33	ea	1979
Insulator Bus Supports	161 kV	11	ea	1979
Cable Terminators (Oil Filled)	161 kV	6	ea	1979
Lightning Arrestors	145 kV	6	ea	1979
4" Alum Bus		936	lf	1979
2" Alum Bus		360	lf	1979
Disconnect Switch Support Structure	161 kV	6	ea	1979
Pilot Wire Room (7 B-B Panels)	18' x 36'	648	sf	1979
Relay Control Panels in Pilot Room (7 B-B)		14	ea	1979
Yard size	130' x 270'	35,100	sf	1979
Yard Grounding		3,510	lf	1979
Yard Fencing		800	lf	1979
Yard Crushed Gravel		650	cy	1979
Yard Lighting		4	ea	1979
Lighting Poles - Steel	75'	4	ea	1979
Primary Pump Station				
Fused Cutout	200A	9	ea	1955
Capacitors	3.6 MVAR	2	ea	1955
Disconnect Switch, Single Phase	15kV	9	ea	1955
Lightning Arrestors	15kV	3	ea	1955
Circuit Breaker, Oil	15kV	1	ea	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Fencing, Chainlink	8'	170	lf	1955
Instrumentation transformer, CT	15kV	6	ea	1955
1-Phase Power Transformer	2500 kVA	3	ea	1955
Secondary Pump Station				
Fused Cutout	400A	3	ea	1995
Disconnect Switch, 1-Phase	15kV	24	ea	1955
Circuit Breaker, Oil	15kV	1	ea	1955
Fencing, Chainlink	8'	240	lf	1955
Instrumentation transformer, CT	15kV	6	ea	1955
1-Phase Power Transformer	2500 kVA	3	ea	1955
1-Phase Power Transformer	3750 kVA	1	ea	1955
Rowland Creek Substation				
Transformers 1 EA @ 4000 kVA	4000 kVA	4	MVA	1995
Vacuum Circuit Breaker	15 kV	1	ea	1995
Voltage Regulator	15 kV	3	ea	1995
Air Switches, gang operated	15 kV	3	ea	1995
Disconnect Switch Support Structure	15 kV	6	ea	1995
Insulators	15 kV	6	ea	1995
Insulator Bus Supports	15 kV	6	ea	1995
Cable Terminators	15 kV	6	ea	1995
Lightning Arrestors	15 kV	3	ea	1995
Yard Size	40' x 60'			1995
Yard Grounding		480	lf	1995
Yard Fencing		200	lf	1995
Yard Crushed Gravel		5	cy	1995
Underground Circuits				
Cable, 600V Copper	#10	16176	sclf	1955
Cable, 600V Copper	#10	10123	sclf	1965
Cable, 600V Copper	#10 awg	306	sclf	1975

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Cable, 600V Copper	#10 awg	6306	sclf	1985
Cable, 600V Copper	#4 awg	23803	sclf	1955
Cable, 600V Copper	#4 awg	2553	sclf	1985
Cable, 600V Copper	#8 awg	4895	sclf	1955
Cable, 600V Copper	#8 awg	6153	sclf	1985
Cable, 600V Copper	#8 awg	1000	sclf	1995
Cable, 5kV Copper	#250 MCM	1984	sclf	1985
Cable, 15kV Copper	#10 awg	4997	sclf	1955
Cable, 15kV Copper	#10 awg	2352	sclf	1965
Cable, 15kV Copper	#10 awg	432	sclf	1975
Cable, 15kV Copper	#10 awg	6608	sclf	1985
Cable, 15kV Copper	#10 awg	11040	sclf	1995
Cable, 15kV Copper	#8 awg	336	sclf	1965
Cable, 15kV Copper	#8 awg	2395	sclf	1985
Cable, 15kV Copper	#6 awg	3365	sclf	1985
Cable, 15kV Copper	#4 awg	17687	sclf	1955
Cable, 15kV Copper	#4 awg	6376	sclf	1985
Cable, 15kV Copper	#2 awg	6384	sclf	1955
Cable, 15kV Copper	#2 awg	1145	sclf	1965
Cable, 15kV Copper	#2 awg	8644	sclf	1985
Cable, 15kV Copper	#2/0 awg	18996	sclf	1955
Cable, 15kV Copper	#2/0 awg	457	sclf	1965
Cable, 15kV Copper	#2/0 awg	500	sclf	1975
Cable, 15kV Copper	#2/0 awg	3015	sclf	1985
Cable, 15kV Copper	#250 MCM	529	sclf	1985
Cable, 15kV Copper	#350 MCM	625	sclf	1985
Cable, 15kV Copper	#500 MCM	8879	sclf	1955
Cable, 15kV Copper	#500 MCM	6104	sclf	1965
Cable, 15kV Copper	#500 MCM	600	sclf	1975
Cable, 15kV Copper	#500 MCM	32503	sclf	1985
Cable, 15kV Copper	#500 MCM	1486	sclf	1995
Cable, 161kV, Copper	#1500 MCM	38208	sclf	1955

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Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Cable, 161kV, Copper	#2000 MCM	6231	sclf	1979
Cable, 161kV, Copper	#2500 MCM	15375	sclf	1979
Overhead Circuits				
Cable, 600V, Copper	#4 awg	569	sclf	1955
Conductor, ACSR	#2 awg	5747	sclf	1965
Conductor, ACSR	#2 awg	9507	sclf	1975
Conductor, ACSR	#2 awg	44194	sclf	1985
Conductor, ACSR	#2 awg	11419	sclf	1995
Conductor, ACSR	#2 awg	786	sclf	2000
Conductor, ACSR	#1 awg	4422	sclf	1955
Conductor, ACSR	#1 awg	2042	sclf	1965
Conductor, ACSR	#1 awg	1689	sclf	1975
Conductor, ACSR	#1 awg	5218	sclf	1985
Conductor, ACSR	#1 awg	986	sclf	1995
Conductor, ACSR	#1/0 awg	10129	sclf	1955
Conductor, ACSR	#1/0 awg	22166	sclf	1965
Conductor, ACSR	#1/0 awg	10737	sclf	1975
Conductor, ACSR	#1/0 awg	13606	sclf	1985
Conductor, ACSR	#1/0 awg	300	sclf	1995
Conductor, ACSR	#250 MCM	169	sclf	1975
Conductor, ACSR	#250 MCM	2877	sclf	1985
Conductor, ACSR	#250 MCM	3068	sclf	1995
Conductor, ACSR	#397.5 MCM	4374	sclf	1975
Conductor, AL	#2 awg	479	sclf	1965
Conductor, AL	#2 awg	1786	sclf	1985
Conductor, AL	#2 awg	2852	sclf	1995
Conductor, AL	#2 awg	1791	sclf	2000
Conductor, Copper	#12 awg	125	sclf	1975
Conductor, Copper	#8 awg	886	sclf	1975
Conductor, Copper	#8 awg	2039	sclf	1985
Conductor, Copper	#8 awg	915	sclf	1995

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Conductor, Copper	#8 awg	712	sclf	2000
Conductor, Copper	#4 awg	1102	sclf	1955
Conductor, Copper	#4 awg	35199	sclf	1975
Conductor, Copper	#4 awg	17898	sclf	1985
Conductor, Copper	#4 awg	1683	sclf	1995
Conductor, Copper	#3 awg	414	sclf	1975
Conductor, Copper	#2 awg	385	sclf	1955
Conductor, Copper	#2 awg	9425	sclf	1965
Conductor, Copper	#2 awg	2672	sclf	1975
Conductor, Copper	#2 awg	22746	sclf	1985
Conductor, Copper	#2 awg	7780	sclf	1995
Conductor, Copper	#2 awg	2305	sclf	2000
Conductor, Copper	#2/0 awg	465	sclf	1965
Conductor, Copper	#2/0 awg	1053	sclf	1975
Conductor, Copper	#2/0 awg	18007	sclf	1985
Conductor, Copper	#2/0 awg	6746	sclf	1995
Conductor, Copper	#2/0 awg	875	sclf	2000
Conductor, Copper	#250 MCM	2436	sclf	1955
Conductor, Copper	#250 MCM	31364	sclf	1965
Conductor, Copper	#250 MCM	66716	sclf	1975
Conductor, Copper	#250 MCM	30953	sclf	1985
Conductor, Copper	#250 MCM	26597	sclf	1995
Conductor, Copper	#250 MCM	555	sclf	2000
Transformers				
3-Phase	45 kVA	1	ea	1985
3-Phase	100 kVA	3	ea	1965
3-Phase	100 kVA	5	ea	1985
3-Phase	112.5 kVA	1	ea	1955
3-Phase	167.5 kVA	3	ea	1965
3-Phase	200 kVA	1	ea	1985
3-Phase	250 kVA	2	ea	1985

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
3-Phase	300 kVA	1	ea	1985
3-Phase	500 kVA	2	ea	1955
3-Phase	500 kVA	4	ea	1985
3-Phase	750 kVA	6	ea	1955
3-Phase	750 kVA	1	ea	1965
3-Phase	750 kVA	1	ea	1975
3-Phase	750 kVA	2	ea	1985
3-Phase	1000 kVA	1	ea	1955
3-Phase	1000 kVA	2	ea	1965
3-Phase	1000 kVA	1	ea	1975
3-Phase	1000 kVA	1	ea	1985
3-Phase	1000 kVA	2	ea	1995
3-Phase	1500 kVA	1	ea	1955
3-Phase	1500 kVA	1	ea	1965
3-Phase	1500 kVA	4	ea	1985
3-Phase	2000 kVA	1	ea	1965
3-Phase	2000 kVA	1	ea	1975
3-Phase	2500 kVA	3	ea	1985
3-Phase	2840 kVA	1	ea	1985
3-Phase	3750 kVA	1	ea	1965
3-Phase	3750 kVA	1	ea	1985
3-Phase	6500 kVA	2	ea	1955
1-Phase	5 kVA	3	ea	2000
1-Phase	10 kVA	5	ea	1955
1-Phase	10 kVA	11	ea	1965
1-Phase	10 kVA	4	ea	1975
1-Phase	10 kVA	8	ea	1985
1-Phase	10 kVA	5	ea	1995
1-Phase	10 kVA	1	ea	2000
1-Phase	15 kVA	2	ea	1955
1-Phase	15 kVA	6	ea	1975
1-Phase	15 kVA	9	ea	1985

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
1-Phase	15 kVA	1	ea	2000
1-Phase	25 kVA	3	ea	1955
1-Phase	25 kVA	1	ea	1965
1-Phase	25 kVA	3	ea	1975
1-Phase	25 kVA	15	ea	1985
1-Phase	25 kVA	5	ea	1995
1-Phase	37.5 kVA	2	ea	1965
1-Phase	37.5 kVA	3	ea	1975
1-Phase	37.5 kVA	3	ea	1985
1-Phase	37.5 kVA	3	ea	1995
1-Phase	50 kVA	3	ea	1955
1-Phase	50 kVA	3	ea	1965
1-Phase	50 kVA	8	ea	1975
1-Phase	50 kVA	20	ea	1985
1-Phase	50 kVA	4	ea	1995
1-Phase	75 kVA	15	ea	1985
1-Phase	75 kVA	6	ea	1995
1-Phase	100 kVA	1	ea	1955
1-Phase	100 kVA	12	ea	1975
1-Phase	100 kVA	22	ea	1985
1-Phase	100 kVA	5	ea	1995
1-Phase	150 kVA	4	ea	1975
1-Phase	167 kVA	3	ea	1965
1-Phase	167 kVA	6	ea	1975
1-Phase	167 kVA	3	ea	1985
1-Phase	167 kVA	3	ea	2000
1-Phase	250 kVA	3	ea	1995
Single Phase Disconnect Switch	15 kV	3	ea	1965
Single Phase Disconnect Switch	15 kV	6	ea	1975
Single Phase Disconnect Switch	15 kV	15	ea	1985
Single Phase Fused Cutout	15 kV	18	ea	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Single Phase Fused Cutout	15 kV	43	ea	1965
Single Phase Fused Cutout	15 kV	111	ea	1975
Single Phase Fused Cutout	15 kV	175	ea	1985
Single Phase Fused Cutout	15 kV	60	ea	1995
Single Phase Fused Cutout	15 kV	10	ea	2000
Three Phase Gang Switch	15 kV	1	ea	1965
Three Phase Gang Switch	15 kV	3	ea	1975
Three Phase Gang Switch	15 kV	10	ea	1985
Three Phase Gang Switch	15 kV	1	ea	1995
Three Phase Gang Switch	15 kV	3	ea	2000
4-way Pad Mount Switch	15 kV	23	ea	1985
Recloser	15 kV	1	ea	1965
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	325	sf	1955
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	300	sf	1965
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	75	sf	1975
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	650	sf	1985
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	50	sf	1995
Cable Terminators, UG, est. 1 per phase at riser pole, Pad Transformers		39	ea	1955
Cable Terminators, UG, est. 1 per phase at riser pole, Pad Transformers		36	ea	1965
Cable Terminators, UG, est. 1 per phase at riser pole, Pad Transformers		9	ea	1975
Cable Terminators, UG, est. 1 per phase at riser pole, Pad Transformers		78	ea	1985
Cable Terminators, UG, est. 1 per phase at riser pole, Pad Transformers		6	ea	1995
Cable Terminators, UG, est. 1 per phase at pad mount transformer		39	ea	1955
Cable Terminators, UG, est. 1 per phase at pad mount transformer		36	ea	1965
Cable Terminators, UG, est. 1 per phase at pad mount transformer		9	ea	1975
Cable Terminators, UG, est. 1 per phase at pad mount transformer		78	ea	1985
Cable Terminators, UG, est. 1 per phase at pad mount transformer		6	ea	1995
Lightning arrestors, est. 1 per phase	13 to 26 KV	53	ea	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Lightning arrestors, est. 1 per phase	13 to 26 KV	56	ea	1965
Lightning arrestors, est. 1 per phase	13 to 26 KV	55	ea	1975
Lightning arrestors, est. 1 per phase	13 to 26 KV	173	ea	1985
Lightning arrestors, est. 1 per phase	13 to 26 KV	35	ea	1995
Lightning arrestors, est. 1 per phase	13 to 26 KV	8	ea	2000
Grounding Rod, est. 1 per transformer		27	ea	1955
Grounding Rod, est. 1 per transformer		32	ea	1965
Grounding Rod, est. 1 per transformer		47	ea	1975
Grounding Rod, est. 1 per transformer		54	ea	1985
Grounding Rod, est. 1 per transformer		31	ea	1995
Grounding Rod, est. 1 per transformer		8	ea	2000
Utility Poles	20'	5	ea	1975
Utility Poles	20'	1	ea	1985
Utility Poles	25'	3	ea	1985
Utility Poles	30	3	ea	1955
Utility Poles	30	1	ea	1965
Utility Poles	30	4	ea	1975
Utility Poles	30	5	ea	1985
Utility Poles	35	2	ea	1955
Utility Poles	35	8	ea	1965
Utility Poles	35	10	ea	1975
Utility Poles	35	15	ea	1985
Utility Poles	35	4	ea	1995
Utility Poles	40	7	ea	1955
Utility Poles	40	32	ea	1965
Utility Poles	40	53	ea	1975
Utility Poles	40	63	ea	1985
Utility Poles	40	27	ea	1995
Utility Poles	40	2	ea	2000
Utility Poles	45	12	ea	1955

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Utility Poles	45	42	ea	1965
Utility Poles	45	87	ea	1975
Utility Poles	45	104	ea	1985
Utility Poles	45	34	ea	1995
Utility Poles	45	7	ea	2000
Utility Poles	50	1	ea	1955
Utility Poles	50	11	ea	1965
Utility Poles	50	21	ea	1975
Utility Poles	50	20	ea	1985
Utility Poles	50	15	ea	1995
Utility Poles	50	1	ea	2000
Utility Poles	55	5	ea	1965
Utility Poles	55	6	ea	1975
Utility Poles	55	18	ea	1985
Utility Poles	55	5	ea	1995
Utility Poles	60	1	ea	1965
Utility Poles	60	10	ea	1975
Utility Poles	60	8	ea	1985
Utility Poles	60	3	ea	1995
Utility Poles	60	2	ea	2000
Utility Poles	65	1	ea	1965
Utility Poles	65	1	ea	1975
Utility Poles	65	2	ea	1985
Utility Poles	65	2	ea	2000
Utility Poles	70	1	ea	1975
Cross Arms est. 1 per pole	6'	25	ea	1955
Cross Arms est. 1 per pole	6'	101	ea	1965
Cross Arms est. 1 per pole	6'	198	ea	1975
Cross Arms est. 1 per pole	6'	239	ea	1985
Cross Arms est. 1 per pole	6'	90	ea	1995
Cross Arms est. 1 per pole	6'	14	ea	2000

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
Down Guys and anchors		19	ea	1955
Down Guys and anchors		51	ea	1965
Down Guys and anchors		139	ea	1975
Down Guys and anchors		140	ea	1985
Down Guys and anchors		82	ea	1995
Down Guys and anchors		9	ea	2000
Grounding Rod, est. 4 per mile of OH circuit		41	ea	1985
Grounding Rod, est. 4 per mile of OH circuit		41	ea	1975
Grounding Rod, est. 4 per mile of OH circuit		179	ea	1955
Utility Vaults	est. 4' x 6' x 6'	103	ea	1955
Splices, UG, est. 6 per utility vault		618	ea	1985
Lighting	est. 1000 watt	113	ea	1995
Secondary Meters		50	ea	1955
Secondary Meters		54	ea	1975
Secondary Meters		54	ea	1985
Housing - Arnold Village				
Underground Circuits				
Cable, 15kV, AL	#1/0 awg	5,985	sclf	2001
Bare Conductor, Copper	#1/0 awg	1,995	sclf	2001
Cable, 600V, Copper, THHN	#500 MCM	6,345	sclf	2001
Cable, 600V, Copper, THHN	#4/0 awg	4,770	sclf	2001
Ductbank		5700	lf	2001
Transformers				

TABLE 1
Fixed Inventory
Electric Distribution System Arnold AFB, TN

Component	Size	Quantity	Unit	Approximate Year of Construction
3-Phase	500 kVA	3	ea	2001
Transformer Pad, Concrete, est. 25 sf / ea	6-in.	75	sf	2001
Cable Terminators, UG, est. 1 per phase at riser pole		9	ea	2001
Cable Terminators, UG, est. 1 per phase at pad mount transformer		9	ea	2001
Grounding Rod, est. 1 per transformer		3	ea	2001
Secondary Meters		4	ea	2001

cy = cubic yars
ea = Each
est. = estimated
kVA = kilo Voltamperes
lf = linear foot
sclf = single conductor linear foot
sf = square feet

J1.2.2 Electric Distribution System Non-Fixed Equipment and Specialized Tools

Table 2 lists other ancillary equipment (spare parts) and **Table 3** lists specialized vehicles and tools included in the purchase. Offerors shall field verify all equipment, vehicles, and tools prior to submitting a bid. Offerors shall make their own determination of the adequacy of all equipment, vehicles, and tools.

TABLE
Spare Parts
Electric Distribution System, Arnold AFB, TN

Qty	Item	Make/Model	Description	Remarks
None Identified				

TABLE
Specialized Vehicles and Tools
Electric Distribution System, Arnold AFB, TN

Description	Quantity	Location	Maker
None Identified			

J1.2.3 Electric Distribution System Manuals, Drawings, and Records

Table 4 lists the manuals, drawings, and records that will be transferred with the system.

TABLE
Manuals, Drawings, and Records
Electric Distribution System, Arnold AFB, TN

Qty	Item	Description	Remarks
	Various	See Bidders' Library for Manuals, Drawings and Records to be included with the system to be privatized	

J1.3 Specific Service Requirements

The service requirements for the Arnold AFB electric distribution system are as defined in the Section C, *Description/Specifications/Work Statement*. The following requirements are specific to the Arnold AFB electric distribution system and are in addition to those found in Section C. If there is a conflict between requirements described below and Section C, the requirements listed below take precedence over those found in Section C.

J1.3.1 AEDC Utility Operations

The AEDC mission is an on-going 24 hour a day operation. The UP Contractor shall provide all required support to the Mission Support Contractor and the Government that is necessary to coordinate his utility operations. The UP Contractor shall maintain a staff of management and personnel capable of reacting to interruptions, changes required by mission, disruptions, or other changes from routine operations, on-site, within the industrial complex, 24 hours a day, seven days a week, 365 days a year.

The UP Contractor shall distribute electrical power, both 13.8KV and 161 KV, to both test and base support customers 24 hours a day, 365 days a year. Customers are sub-metered. In some areas, customers have equipment, which can detect minor, not readily observable, interruptions and voltage changes or anomalies. The electrical power received from Government suppliers shall be delivered to the Center customers (test cells, plants, utilities, facilities, support systems, see J1.12.2, Utility System Points of Demarcation and Restricted Access Areas.). Unscheduled service interruptions could result in loss of test articles, facilities, reduced plant productivity, freeze protection, and many other critical Center operations. A limited number of facilities are served by generators as well as on-line power. These generators support fire protection, medical aid, operations control, utility plants, computer systems and other critical functions requiring a relatively small amount of electrical power.

The UP Contractor shall operate the utility system efficiently and effectively, minimizing interruptions in service, see Section J1.3.6, Service Interruptions. Service shall be to the interfaces defined by the points of demarcation specified in Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas, see Tables 12 and 13. AEDC test and mission support equipment is sensitive to faults, breaks, voltage spikes and other power quality anomalies. When these occur, the UP Contractor will be contacted and requested to join in an investigation of the cause. The UP Contractor shall participate fully in this investigation to include management and engineering resources. If the cause of this occurrence is determined to be the responsibility of the UP Contractor, reimbursement to the Government for any damages caused to equipment or lost service shall be in accordance with Section J1.3.6, Service Interruptions. The UP Contractor is not responsible for lost service assessment when caused by adverse weather or by actions of the Government or Mission Support Contractor which fail or damage UP Contractor operated and maintained equipment.

Response times for the purpose of this Contract fall into two categories, emergency and routine, see Section C.8, Routine and Emergency Repair Response. Emergencies are defined as loss of utility service that has a direct impact on on-going mission testing, safety, health and the welfare of AEDC personnel. All other responses are defined as routine. The UP Contractor shall respond immediately upon notice by the AEDC Operation Center of an emergency. The UP Contractor shall work the problem until resolution without delay or postponement. Prior to any break in response before resolution and return to service, the UP Contractor shall notify the AEDC Operation Center that a representative of the Government is needed to discuss the response plan and schedule. Upon approval by the Contracting Officer, the UP Contractor shall implement the approved resolution plan.

In accordance with Section C.5, Utility System Ownership, Employees, and Security, the UP Contractor shall submit requests for personnel security clearance to the Contracting Officer. All personnel working within the AEDC industrial complex shall have appropriate clearances. It is not anticipated that a secret clearance will be required.

J1.3.2 Performance Measurement

The Government will measure the UP Contractor's performance using several methodologies. First, each of the more than 1,500 employees at AEDC measures the utilities delivered to them. For example, when the lights do not come on, water pressure drops or waste backs up, they are required to call the AEDC Operations Center and report the problem. A work request is generated and a determination of emergency or routine response is made. If the problem is utilities in nature, the UP Contractor will be called and requested to respond. In many instances, both the Mission Support Contractor and the UP Contractor will have to respond and determine who is responsible for fixing the problem (Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas). The UP Contractor shall take immediate action to resolve problems on his side of the interface and return service as soon as possible (see Section J1.3.6, Service Interruptions). When the problem impacts AEDC's test mission or support activities, the AEDC Operations Center will track the time from report of outage to the time utility service is restored. If the lost service is determined to have been caused by the UP Contractor or UP Contractor's

equipment, the cost of lost service will be assessed in accordance with Section J1.3.7, Cost of Lost Service.

Another method for measuring performance is meter data. There are many meters located at AEDC. These meters provide a good basis for establishing and measuring system performance, specifically system losses. The UP Contractor shall use historic data and initial meter readings to establish a baseline for system efficiency. The UP Contractor shall report system efficiency monthly in accordance with Section J1.6, Submittals.

The Government, in coordination with the Mission Support Contractor, will also monitor the UP Contractor's performance in coordinating work, complying with standards, policies and practices and in general, and the requirements of this work statement. The UP Contractor is expected to adequately maintain, properly design and protect his equipment to enable uninterrupted reliable service. Unscheduled interruptions due to the UP Contractor's equipment or operations are expected to be rare. All unscheduled interruptions will be investigated, and where found to be attributed to the UP Contractor, the cost for lost test time will be assessed in accordance with Section J1.3.6, Cost of Lost Service.

J1.3.3 System Transition

Transitioning the AEDC utility systems will not be an easy task. Most of the technical data and information available has not been maintained through configuration management over the 50 years of operation. The existing utility workforce is well trained and knowledgeable of the configuration of the systems and the effort required to operate and maintain the utility system without interrupting AEDC's test mission.

In accordance with Section C.13, Transition Plan, the UP Contractor shall plan for an efficient and effective transition of operation, maintenance and investment for the utility system. The UP Contractor's Transition Plan shall address:

a. Specific Transition Requirements, which may include service connections and disconnections, as well as other requirements necessary to support utilities privatization. See Section J1.10, Specific Transition Requirements.

b. Facilities (identify any requirements for facilities, both short term temporary and long term, to support management, engineering, and/or operations and maintenance personnel, and/or materials and equipment)

c. Labor (union or non-union, types, categories, certifications)

d. Training required (identify required training relative to the utility system infrastructure being transferred, infrastructure not being transferred but integrally related to the system being transferred, AEDC procedures, AEDC test operations, or other training requirements needed for system transition)

e. Method for managing technical information which must fall under change control processes discussed in Section J1.3.3, System Configuration and Control, and which will be used by the UP Contractor, the Government and the Mission Support Contractor

f. Current personnel working for the Mission Support Contractor and proposed to be hired by the UP Contractor

g. Access, security clearances, requirements for internet access,

h. Coordination (planning for access to AEDC's local area network, participating in planning and scheduling meetings, forms, practices or procedures the UP Contractor will want AEDC to adopt or adapt to, points of contact, understanding of AEDC response time and lost service assessment requirements)

i. Reducing technical risk (understanding of the work permit process, switching, AEDC Standards, policies and procedures, understanding of equipment to be operated and maintained)

j. Schedule for Investment Work (AEDC's test mission cannot be disrupted; therefore, access to utility system equipment is limited. This has historically resulted in significant additional costs to perform utility maintenance and equipment replacement due to having to work around test schedules.)

k. Final Checkout, Test and Transfer Activities (the UP Contractor shall define specific performance criteria for transition to demonstrate to the Government that the UP Contractor can successfully operate and maintain the utility system)

J1.3.4 System Configuration and Coordination

The Government requires configuration control across systems at AEDC, which dictates configuration control by the UP Contractor and the Mission Support Contractor for a commonly used, operated and maintained utility system. At AEDC, changes on one side of the system interface may cause disruptions or adverse impacts on the other side of the system interface. In rare cases, switching power to a test cell or at Military Family Housing has led to disruptions across the system. For this reason, AEDC has instituted rigorous procedures for managing system configuration and coordinating activities to ensure there are no disruptions to the system.

J1.3.4.1 Configuration Control

All routine configuration changes to the system shall be fully coordinated in advance with the Mission Support Contractor. The UP Contractor shall coordinate any configuration changes with AEDC that may impact Government-owned facilities, test cells or plant utilities. The UP Contractor shall coordinate and support all configuration changes identified by AEDC as required to maintain test facility schedules and objectives. The UP Contractor shall receive approval to switch, backfeed, and perform other similar operations from the Tactical Integration Chairman (a Mission Support Contractor employee).

At the end of each month, the UP Contractor shall report a summary of all configuration, switching and relay changes made during the month. The summary shall be included in the UP Contractor's Monthly Operations and Maintenance Report (see Section J1.6). All switching and relay changes shall be professionally logged. The UP Contractor shall make the logs available to the Government for review when requested.

The UP Contractor shall keep and maintain complete, current and accurate operation and maintenance manuals, diagrams, schematics, procedures, switching policies, confined space entry procedures, and lock out and tag out procedures. The UP Contractor shall submit copies of this information as part of his Annual Operation, Maintenance, Repair, Improvement and Modernization Plan. The UP Contractor shall also make this information available to the Contracting Officer upon reasonable request and notification.

J1.3.4.2 Coordination – Tactical Integration Group Meetings

The UP Contractor shall coordinate with the Mission Support Contractor and the Government to develop a daily, weekly and monthly schedule of meetings for the purpose of reviewing work permit status, discussing emergency operations, scheduling and planning maintenance outages, and other activities requiring coordination. The Mission Support Contractor will have the final authority for the time and location of these meetings. The Mission Support Contractor will prepare minutes and track action items of these meetings. For meetings called by the UP Contractor, the UP Contractor will prepare meeting minutes and maintain an action item log. Meeting minutes shall be submitted within 3 working days to the Contracting Officer.

UP Contractor shall participate in daily Tactical Integration Group (TIG) meetings as directed by the Contracting Officer. The UP Contractor shall be available 24 hours a day to coordinate changes in schedule and requirements to support testing, weather or other concerns. The UP Contractor shall participate in coordination meetings to answer questions about system condition and ability to meet AEDC mission requirements. The Contracting Officer will provide the UP Contractor with a list of weekly scheduling meetings. Currently, the Mission Support Contractor convenes a 0715 daily meeting to coordinate utility test support. The weekly AEDC Outage meetings convene on Wednesday mornings at 0830 hours. The weekly TIG convenes formal meetings on Thursdays at 0830. The UP Contractor shall also attend other ad hoc meetings convened by the TIG Chairman (a Mission Support Contractor employee) as required. Ad hoc meetings are held whenever there is an incident, lost test time, or service interruption. Meeting requirements for the electric distribution system are estimated to require a full time effort.

J1.3.4.3 Power Systems Analysis

Power systems analysis between AEDC and the UP Contractor will require close coordination. AEDC will oversee protective device coordination between the UP Contractor, Tennessee Valley Authority (TVA), and the Center's Mission Support Contractor. AEDC will inform the UP Contractor of system changes. The UP Contractor shall maintain fault studies and provide available fault currents at each point of demarcation. The UP Contractor shall disclose any and all operational information to the Contracting Officer and designated Mission Support Contractor Personnel when requested.

J1.3.4.4 Backfeed Configurations

Table 5 describes backfeeds between the 13.8kV and 6.9kV unit substations. The backfeeds exist at the 480V switchgear. These existing backfeeds are identified to inform the UP Contractor of physical configurations that may be used to supply power to various facilities.

TABLE 5

Backfeeds Between the 13.8 kV and 6.9 kV Unit Substations
Electric Distribution System, Arnold AFB, TN

13.8 kV Unit Substations	6.9 kV Unit Substations
PWT US #8	PWT US #9
PWT US #6	PWT US #7
VKF US #2	VKF US #1
VKF US #7	VKF US #6
ETF US #3	ETF US #2
ETF US #6	ETF US #9
Model Shop US #1	Model Shop US #2 (13.8 kV)
A&E US #1	A&E US #2 (13.8 kV)

J1.3.4.5 Selection of Pipe Materials

Because a large portion of AEDC property is an industrial site, it is likely that buried piping may be exposed to significant concentrations of pollutants. The UP Contractor shall consider potential pollutants and select pipe materials accordingly and in accordance with AWWA C900, Section 4.1.

J1.3.5 Master Work Permits

The Government requires extreme measure be taken when clearing personnel for access to areas within test facilities, when entering confined spaces, interrupting service to work on utilities and infrastructure, and when digging or penetrating the grounds at AEDC. There have been numerous occurrences where personnel have been put into jeopardy, equipment has been damaged and AEDC's test mission impacted due to improper coordinated activities. The AEDC Master Work Permit process is very specific. All requests for work clearance, service interruption (outage) and digging require the UP Contractor to submit an AEDC Master Work Permit and gain approval for the permit prior to work.

In accordance with Section C.9.5, Excavation Permits, and Section C.9.6, Underground Utility Location and Points of Demarcation, the UP Contractor shall submit a Master Work Permit 10 working days prior to performing routine work. Work shall not be performed without a Government approved Master Work Permit. Requests for emergency work shall be coordinated with the AEDC Operations Center.

In response to Master Work Permits requested by others, the UP Contractor shall review and approve, or provide comments regarding disapproval, within 10 working days of requests for routine work. Requests in support of emergency actions shall be worked commensurate with the need for the work.

The UP Contractor shall adhere to AEDC prescribed methods for marking utilities in the field. The UP Contractor shall be responsible for all repairs, costs, and damages due to digging performed by others for which the UP Contractor did not properly mark his utilities

on the approved response to the Master Work Permit. Both Government and UP Contractor approved Master Work Permits shall expire and become invalid 30 days after approval unless otherwise specified on the approved form.

J1.3.6 Service Interruptions

In accordance with Section C.7, Service Interruption/Contingency Plan, the UP Contractor shall notify the AEDC Operations Center of all interruptions to service or incidents where personnel are injured, damage to facilities and equipment are noted, or hazardous materials are spilled or released into the environment. The notification shall be made as soon as possible and no later than 10 minutes after first notice of the incident or interruption. The UP Contractor shall notify the National Response Center, and any other required agencies, of spills that meet reportable quantity thresholds.

J1.3.7 Cost of Lost Service

The UP Contractor shall reimburse the Government for costs associated with loss of mission or unproductive lost test or activity time resulting from unscheduled interruptions or outages determined to have been caused by the UP Contractor. **Table 6** identifies the lost service assessment for each test mission area. Service assessments are reviewed and new rates established for each fiscal year. Attachment J-51 details the AEDC processes for determining responsibility for lost or unproductive test time as a result of outages or equipment failure. Upon notification of a lost service assessment by the Contracting Officer, the UP Contractor shall annotate the credit in the next invoice. If the lost service assessment is greater than the monthly service charge, the monthly service shall be zero (0) and the invoice annotated to show the outstanding lost service assessment credit to be carried forward to the new monthly invoice.

TABLE 6
Lost Service Assessment
Electric Distribution System, Arnold AFB, TN

Test Mission Area	Lost Service Assessment ($ per hour)
ETF/ASTF	$7,935
PWT	$8,856
VKF	$4,589

J1.3.8 Communications and Reporting System

AEDC has an integrated communications and reporting system. The UP Contractor shall submit request for and obtain access to the AEDC Local Area Network for access to unclassified information and to electronic mail. The request shall be submitted to the Administrative Contracting Officer. The UP Contractor shall acquire a local telephone number(s) and provide the Administrative Contracting Officer with the telephone number(s) for key personnel and emergency points of contact.

UP Contractor owned meters are connected to this system to allow Government real time reporting of commodity usage during testing. UP Contractor shall conform to the following AEDC requirements and obtain written approval from the AEDC Communications Chief, Network Control Center prior to altering or changing his system communication, meter reading, or reporting of system usage and performance. These requirements and coordination with the Communications Chief, Network Control Center include prior approval for all forms of wireless communication the UP Contractor proposes for use in maintaining, reporting, and operating his system.

- All personnel with access to AF computer systems, and/or networks or personnel that have access to AF data shall be US Citizens, and have a favorable National Agency Check (NAC).
- In addition, personnel that access AF computer systems, or networks shall complete the AF Network User Licensing course annually.
- Accounts are requested via GC-591.
- Submit communications/computer requirements Via AEDC Form 869.
- Communication/computer systems must comply with current AF/AEDC architecture and communications directives.
- All computer/communications systems must have an approved Certification & Accreditation package PRIOR to operation in accordance with AFI 33-202.

J1.3.9 Facility Metering Requirements

In accordance with Sections C.3.3, Sub-Metering, and J1.5.2, Required New Secondary Meters, the UP Contractor shall install new secondary meters as close as possible to the interface point. The interface point is defined by the most applicable point of demarcation as listed in Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas. Meters shall be revenue quality with calibrations performed annually by the owner with copies provided to the Government. All calibrations must be traceable to NIST (National Institute of Standards and Technology). New secondary meters shall be capable of communicating via modbus, ION, or DNP3 protocols.

The Government and its Mission Support Contractor shall be allowed access to all sub-metering. Hourly sub-metered 161KV power will be posted by the Mission Support Contractor on the AEDC internal LAN for billing test power to customers.

In accordance with Section J1.6, Submittals, the UP Contractor shall keep meter books with consumption and demand (if applicable) for each meter. Meter books shall also include building address or facility number, meter number, previous readings, current readings, multipliers for each meter, total consumption, points of contact for meter questions, and procedure for converting meter readings into consumption (including multipliers). Meter Books shall be submitted monthly in accordance with Section J1.6 in electronic format as Microsoft Excel files. The Government will provide an example format in a Microsoft Excel file to be used for meter reading reports.

J1.3.10 Joint-Use Requirements

In accordance with Section C.5.1.4, Air Force Property, there are requirements for joint-use of infrastructure to be conveyed with the utility system being sold. The UP Contractor shall allow the Government, and non-government entities identified by the Contracting Officer, to install or attach property and equipment to poles, conduits, pipes, duct banks, towers, buildings, and other portions of the utility systems to be transferred. Attachment fees shall not apply for Government or non-government entities identified by the Contracting Officer; however, costs of any make-ready work related to safety requirements may be recovered under the contract. All attachments will be coordinated with the UP Contractor prior to incorporating attachments.

J1.3.10.1 Substation and Electric Manhole Access

The UP Contractor shall grant access to ASTF Airside and Exhaust Side 161 KV substations for AEDC to maintain transformers AA and EA.

Some of the utility manholes included with the system to be privatized may include Government retained infrastructure. The UP Contractor shall grant access to joint use electric manholes for AEDC to maintain controls equipment, 6.9 KV equipment, and 13.8 KV equipment retained by the Air Force.

The UP Contractor shall adhere to AEDC policy on maintaining locked communication manholes.

J1.3.10.2 Building 1525, Power Control Building

Infrastructure included with the system to be privatized is located in Building 1525, Power Control Building. AEDC is retaining this building. The UP Contractor shall have access to Building 1525 to operate and maintain its equipment. The UP Contractor, AEDC, and the Mission Support Contractor shall have joint-use of the Main Control Room and Battery and Cable Tray Room, located in the basement directly below the Main Control Room. AEDC shall provide maintenance and supporting utilities for Building 1525.

The Base EMCS is located in a partitioned office in the Main Control Room in the Building 1525. The Government and its Mission Support Contractor will own and maintain the Base EMCS. The UP Contractor shall grant access to AEDC to install, maintain, and operate EMCS equipment located on or in UP Contractor facilities.

J1.3.10.3 Costs of Services

The UP Contractor is responsible for all utilities, janitorial services, building maintenance, and grounds maintenance for its facilities on Base without cost to the Government. Reimbursement shall be in accordance with Base guidelines for reimbursable services in effect at the time of contract award, and as may change over the life of the contract. The Government shall provide supporting utilities, e.g., electricity to operate pumps and motors at wastewater treatment plant lift stations, as necessary to operate utility system infrastructure being conveyed under this contract.

J1.3.11 Safety, Health, and Environmental Standards

The UP Contractor shall comply with the latest edition of AEDC Safety, Security, Health, Engineering, Configuration Management, Maintenance and Systems Engineering Standards. Copies of these standards are available to the UP Contractor electronically on the AEDC Intranet Homepage.

The UP Contractor shall adhere to AEDC lockout and tagout procedures.

The UP Contractor is responsible for all sampling, monitoring, and reporting requirements to regulatory authorities. Any permit excursions, any Notices of Violation, or any deficiencies noted by regulatory agencies or discovered during Air Force inspections must be addressed immediately. The UP Contractor shall submit copies of all correspondence with, or submittals to, regulatory agencies to the Contracting Officer within 5 days of submittal to the regulatory agency.

In accordance with Section C.10.2, Spill Contingencies, the UP Contractor shall adopt the AEDC Spill Contingency Plan.

In accordance with Section C.10.3, Hazardous Material and Waste Minimization, the UP Contractor shall adopt the AEDC Hazardous Material and Waste Minimization Plan.

In accordance with Section C.10.3, Hazardous Material and Waste Minimization, the UP Contractor shall submit copies of MSDSs to the AEDC Hazardous Materials Pharmacy 15 days in advance of bringing any hazardous materials onto the installation.

None of the facilities to be conveyed have existing storage areas sufficient to handle bulk storage of hazardous materials. None of the facilities to be conveyed are permitted for storage of hazardous waste. In accordance with Section C.10.3, Hazardous Material and Waste Minimization, and Section H.8, Hazardous Substances, construction, operation, and permitting of any such storage areas will be the responsibility of the UP Contractor. The UP Contractor shall not dispose construction debris, demolition materials or wastes, other hazardous materials or wastes, asbestos, or any other material or waste in Arnold AFB landfills.

In accordance with Section C.2.1, Qualified Utility Providers and H.11, Historic Preservation, the UP Contractor shall not perform alterations to any building or structure deemed to be eligible or potentially eligible for placement on the National Register of Historic Places until approved by said officer.

J1.3.12 Fire Control and Safety

The UP Contractor shall enter into a Memorandum of Understanding with AEDC Fire Department for fire protection of all facilities included in the purchase of the utility, and any facilities installed in the future. The UP Contractor will agree to adhere to all fire protection requirements of AEDC. The UP Contractor shall maintain fire alarm system and equipment in facilities on-base and owned by the UP Contractor. The UP Contractor further agrees to permit Fire Department personnel access to their facilities for the sole purpose of performing fire inspections and emergency response.

J1.3.13 Crisis Situations

In accordance with Section C.9.8, *Exercises and Crisis Situations Requiring Utility Support*, the UP Contractor shall provide support as directed by the AEDC Commander or equivalent agency control center for exercises and crisis situations.

J1.4 Current Service Arrangement

Three electric utilities supply power to the Arnold AFB and are the Tennessee Valley Authority (TVA), the Tullahoma Utility Board (TUB), and the Duck River Electric Membership Corporation (Duck River).

The Government retains responsibility for the purchase of the utility commodity and the associated delivery schedule of the commodity. The UP Contractor shall be required to obtain written approval prior to contacting any Base commodity providers. The Government shall notify the UP Contractor of changes in commodity providers or delivery schedules that will impact the UP Contractor's system in accordance with the requirements of this contract.

The TVA provides power to the main industrial area. The TUB supplies electric service in the westernmost portion of the Center, including the golf course, tennis courts, shooting range, and Tennessee Army National Guard area. Duck River provides electric service to operate equipment for the Elk River Dam. Electric service provided by the TUB and Duck River is essentially privatized already.

Arnold AFB's highest peak demand and consumption from Oct-2002 to Jan-2004 occurred in Jan-2004. The electric energy usage for Jan-2004 was approximately 39,146,208 kilowatt-hours (kWh) with a peak demand of 423 megawatts (MW). The lowest peak demand occurred in Mar-2003 when the peak demand was 87.5 MW.

The geographic area occupied by the Center is not within the exclusive service area of any electric utility. No investor-owned electric utility has been granted a CCN by the TRA to serve any of the geographic area occupied by the Center. The electric service provided by TVA is exempt from regulation by the TRA. Arnold AFB is not within the exclusive service area of any municipal electric utility. The electric service provided to the easternmost portion of the Center by the Tullahoma Utilities Board is not with the municipal boundaries of Tullahoma; therefore, Tullahoma has no exclusive right to provide electric service to this area. Duck River Electric Membership Corporation, which provides electric service to the Elk River Dam, does not have an exclusive service area under state law.

J1.5 Secondary Metering

J1.5.1 Existing Secondary Meters

Table 7 provides a listing of the existing (at the time of contract award) secondary meters that will be transferred to the UP Contractor. The UP Contractor shall provide meter readings for all secondary meters in accordance with Section C.3 and J1.6 below.

TABLE 7

Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
676	VKF 13.8 US 4
451	CENTRAL SHOPS 1
451	CENTRAL SHOPS 2
451	CENTRAL SHOPS 3
936	ASTF USER BLUE BLDG
878	ETF-B C1
878	ETF-B C2
879	ETF-B E1
879	ETF-B E2
888	ETF-A Tr. 5 Sec.1
888	ETF-A Tr. 5 Sec.2
888	ETF-A Tr. 6 ICL
883	ETF-A Tr. 7 ICL
883	6.9 Unit 10F
	ASTF UG 81, E-6
	ASTF UG 82
	ASTF UG 83
	ASTF UG 84
888	LR1
850	ETF INST. OPER. BLDG
683	VKF 13.8 US 7
878	ETF 13.8 US 3, ETF AC&T
878	ETF 13.8 US 3A
876	ETF SHOP US
877	ETF OFFICE SUB (in back)
877	ETF OFC (S. wing eq.rm)
877	ETF OFC (N. wing eq.rm)
881	ETF 13.8 US 5
880	ETF 13.8 US 6
882	ETF 13.8 US 7
884	ETF 13.8 US 13
885	ETF REFER COMP RM

TABLE 7
Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
1541	ETF SL-1 (reset)
541	ETF SL2/3 13.8 US 1A
541	ETF SL2/3 13.8 US 1B
541	ETF SL2/3 13.8 US 2
1474	NAVY WAREHOUSE
929	ASTF 13.8 US 1
912	ASTF 13.8 US 2A
912	ASTF 13.8 US 2B
912	ASTF 13.8 US 2C
903	ASTF 13.8 US 3
1099	ASTF 13.8 US 4
939	ASTF USER FAC
1433	LITTLE TIN BLDG.
651	VKF UNIT 6
651	VKF UNIT 10
651	VKF UNIT 15
651	VKF UNIT 16
651	VKF UNIT 20
651	VKF UNIT 25
	PES 4T-IDS UNIT-SUB
	PES 4-T IDS MOTOR
780	PWT M1
780	PWT M3
780	PWT M4
780	PWT AUX TO M1 & M2
780	PWT AUX TO M3 & M4
784	PWT 2C DRYER
	PWT DRYER BLDG. T-1 (met. outside)
	PWT DRYER BLDG. T-2 (met. inside)
719	PES Tr. # 1 ICL 1 BUS A
719	PES Tr. # 1 ICL 2 BUS B

TABLE 7
Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
719	PES Tr. # 2 ICL BUS C
719	PES Tr. # 3 ICL BUS F
719	PES Tr. # 4 ICL 1BUS D
719	PES Tr. # 4 ICL 2 BUS E
651	VKF 13.8 US 2
651	VKF 13.8 US 3
651	VKF 13.8 US 10
718	HTL-Arc Heater
718	HTL US 1
718	HTL 2E1
718	HTL 1F1
797	PWT INST & MAINT BLDG
760	PWT 13.8 US 4
787	PWT 13.8 US 6
745	PWT 13.8 US 8
710	PES 13.8 US 14
1416	TMT Bldg Service
740	PWT 13.8 US 5
1088	VKF DECADE (KWH)
1077	VKF MARK I ELA US 5
1075	VKF MK I C2M11 ACB
578	VKF APTU US 1
678	VKF 13.8 US 9
2120	ETF J6 SUPPORT BLDG
2215	ETF LRF SOLID STORAGE
530	ETF J-4 UNIT SUB 1
567	ETF J-4 UNIT SUB 2
527	ETF J-5 UNIT SUB
2123	ETF J6 US 1A CONTRL
2123	ETF J6 US 1B CONTRL
2123	ETF J6 US 2A LEB

TABLE 7
Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
2123	ETF J6 US 2B LEB
2123	ETF J6 US 4
563	ETF J6 US 3 Steam Plant
320	VKF S-1 RANGE
320	VKF S-2 RANGE
430	VKF 13.8 US 8
620	VKF COW BARN EAST
2912	Gossic Mgt Cntr
	C7T1 Fish Camp
1411	MAIN STEAM PLANT
1525	POWER CONTROL U.S.
3038	PRIMARY P.S.
1507	S.P.S. UNIT SUB # 1
1507	S.P.S. UNIT SUB # 2
	ROWLAND CREEK
	Cooling Tower # 1 480v Mcc3 US4
	Cooling Tower # 2 Main US # 16
	Cooling Tower - B1
	Cooling Tower - B2
	Return Basin # 1
	Return Basin # 2
100	A&E US 1
100	A&E US 2
225	DISPENSARY
452	MAIN CAFÉ
1478	BCE U.S., [New sub]
1400	AUTOMOTIVE US
1358	FITNESS FAC. # 1
1358	FITNESS FAC. #2
	WAREHOUSE, New U.S. Meter
1103	CEAF. US - A

TABLE 7
Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
1103	CEAF. US - B
1504	WTR TREAT PLT
350	PMEL
3025	FAMILY HOUSING
3028	H-3028 UNITS 4,6,8,10
3029	H-3029 UNITS 12,14,16,18
3030	H-3030 UNITS 20,22,24,26 , avg'd
445	CHEM LAB
3017	OOM U.S. # 1
3027	VOQ-FOREST INN
125	COMMISARY COMPLEX
125	BX
2910	Fam Camp Campground
	#1 GIRL SCOUT CAMP
	#2 GIRL SCOUT CAMP
	#3 GIRL SCOUT CAMP
253	FOREIGN TECH BLDG
	CF-1__VCB_13
	CF-1__VCB_14
	CF-1__VCB_15
	CF-1__VCB_16
	CF-1__VCB_17
	CF-1__VCB_18
	CF-1_VCB_SUB-TOTAL
	CF-1__VCB_11__(MAIN_BKR)
	CF-2__VCB_20
	CF-2__VCB_22
	CF-2__VCB_23
	CF-2_____VCB_____24
	CF-2__VCB_25__IN
	CF-2__VCB_25_OUT

TABLE 7
Existing Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
	CF-2__VCB_26
	ACB_1114
	CF-2__VCB_27
	CF-2__VCB_28
	CF-2__VCB_21__(MAIN_BKR)
	CF-2_VCB_SUB-TOTAL

J1.5.2 Required New Secondary Meters

The UP Contractor shall install and calibrate new secondary meters as listed in **Table 8**. New secondary meters shall be installed in accordance with Section C.13, Transition Plan and Section J1.3.9, Facility Metering Requirements. After installation, the UP Contractor shall maintain and read these meters in accordance with Sections C.3.3 and J1.6 below.

TABLE 8
New Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
108	Credentials Bldg.
526	Ground Water Treatment #22
560	ETF-B Turbojet Emission Test Bldg.
577	APTU Maintenance Storage Building
578	APTU Test Cell Control Bldg.
579	APTU Test Cell Bldg., APTU Test Cell
591	J-6 Bldg. 591
648	VKF Bldgs 648, 635, 646 (Pole 237)
675	VKF Hotshot Bldg., Wtr. Cooling Sys
675	VKF Hotshot Bldg., Wtr. Cooling Sys
718	HTL Lab Bldg 718
721	HTL Raw Water Pump
790	PWT Water Treatment, Bldg 790
908	ETF-C Return Basin

TABLE 8
New Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
1090	ETF-C Cooling Towers
1092	ETF-C Cooling Towers Control Bldg.
1093	Decade Warehouse Bldg 1093
1428	Warehouse # 8
1456	Hazmat Waste Storage Bldg. 1456
1459	Hazardous Pharmacy
1473	Warehouse Hardstand and Trailer
1476	Steam Pit
1477	Warehouse #2, Bldg. 1477
1552	Sewage Treatment Plant 1552
1559	Groundwater Treatment Site 1
1560	Treatment Reservoir
1575	Bulk Fuel Storage
1650	Salvage Area
1690	Rocket Prep Area No. 1 (RPA -1) Building
1695	RPA Ignitor Checkout Bldg.
1697	RPA Support Bldg.
2103	HEF Trailer Pad
2104	HNO3 Storage Bldg.
2106	UDMH Storage Bldg. - HEF Fuel Area
2107	Rocket Storage Base Assembly
2111	New Fireman Training Area
2201	RPA-4 Storage Bldg.
2202	RPA -4 Heating Bldg.
2206	Explosive Inspection Stn Holding Yard (Off 6TH St.)
2208	Solid Rocket Fuel Storage Igloo No.1 (1237 SF)
2209	Solid Rocket Fuel Storage Igloo No.2 (1237 SF)
2210	RPA-3 {2210 & 2210-A}
2213	Change House
2214	Webber Box (Rocket Storage Base Assy)
2216	Rocket Storage Bldg.

TABLE 8
New Secondary Meters
Electric Distribution System, Arnold AFB, TN

Meter Location	Meter Description
2219	Rocket Propellant - Oxidizer - Group Ii
2220	Rocket Propellant - Oxidizer - Group Ii
2221	Rocket Propellant - Oxidizer - Group Ii
2222	Rocket Propellant - Oxidizer - Group Ii
2223	Rocket Propellant - Oxidizer - Group Ii
2224	Propellant Trailer Pad - Hydrogen
2227	Propellant Trailer Pad - N204
2228	Explosive/Rocket Motor Storage
3046	Pump House (MFH)
3055	Community Center
	Bradley Creek Treatment Transformer
	FP&C Trailers
	ASTF Transformers A1, A2, A3, A4, E1, E2, E3, E4, E5, and E6 (secondary side)

J1.6 Submittals

The UP Contractor shall provide the Government submittals for the following:

1. Invoice (in accordance with G.2). The UP Contractor's monthly invoice shall be presented in a format proposed by the UP Contractor and accepted by the Contracting Officer. Invoices shall be submitted by the 5th of each month for the previous month. Invoices shall be submitted to:

   Name: AEDC / MAT
   Address: MS 9015, Building 1099, 1099 Avenue C, Arnold AFB, TN, 37389
   Phone number: (931) 454-6712

2. Operations and Maintenance (O&M) Report. The UP Contractor's monthly O&M report will be prepared in the format proposed by the UP Contractor and accepted by the Contracting Officer. O&M reports shall include the following information for utility work:

   Scheduled outages: Requestor, date, time, duration, facilities affected, feedback provided during outage, outage notification form number, and digging clearance number.

Unscheduled outages: Include date, time and duration, facilities affected, response time after notification, completion times, feedback provided at time of outage, specific item failure, probability of future failure, long term fix, and emergency digging clearance number.

Maintenance, maintenance and repair, investment and modernization accomplishments: Identify work performed to maintain safe, environmentally compliant, reliable and available operations. Compare and contrast actual work accomplished with annual M&R Plan. Provide a list of all configuration changes and supporting documentation (identify assets changed, documentation numbers or identifiers, scope of change, revision after change, reason for change, date documentation updated). Provide planning to reduce or eliminate system losses.

O&M reports shall be submitted by the 25th of each month for the previous month. Outage reports shall be submitted to:

Name: AEDC / MAT
Address: MS 9015, Building 1099, 1099 Avenue C, Arnold AFB, TN, 37389
Phone number: (931) 454-6712

3. Meter Reading Reports. There are two basic reports required for meter readings. The first report is to be accomplished hourly. The hourly report will include 161 KV (Test) electrical power meter readings. Test power readings shall be reported to the AEDC Operations Center. The report may be in a format proposed by the UP Contractor and agreed to by the Contracting Officer which allows use of server based spreadsheets that are updated and may be viewed by Center personnel. Information security shall be addressed in the UP Contractor's proposed approach. The second report or monthly meter reading report shall show the current and previous month readings for all meters. The UP Contractor's monthly meter reading report will be prepared in the format proposed by the UP Contractor and accepted by the Contracting Officer. Meter reading reports shall be submitted by the 5th of each month for the previous month. Meter reading reports shall be submitted to:

   Name: AEDC / MAT
   Address: MS 9015, Building 1099, 1099 Avenue C, Arnold AFB, TN, 37389
   Phone number: (931) 454-6712

4. System Efficiency Report. In accordance with Section C.3, the UP Contractor shall submit a monthly system efficiency report in a format proposed by the UP Contractor and accepted by the Contracting Officer. The UP Contractor shall establish a baseline documenting the efficiency of commodity delivery through the distribution system. The basis for efficiency reporting shall incorporate an approach that accounts for commodity received from the commodity providers, commodity delivered to end users and system losses and unaccounted for uses. The UP Contractor's report shall demonstrate performance relative to the baseline, to include efforts planned and implemented to reduce system losses and unaccounted for uses. System efficiency reports shall be submitted by the 25th of each month for the previous month. System efficiency reports shall be submitted to:

   Name: AEDC / MAT

Address: MS 9015, Building 1099, 1099 Avenue C, Arnold AFB, TN, 37389
Phone number: (931) 454-6712

5. Annual Operation, Maintenance, Repair, Improvement and Modernization Plan. The UP Contractor shall submit its first Plan 30 Days after Contract Award and shall update the Plan annually thereafter. The Plan shall identify any planned outages or interruptions to service, configuration changes or facility modifications, and system upgrades. The Plan shall also identify system improvements to reduce losses. The Plan shall clearly delineate points of contact, their responsibilities and any interfacing operational policies and procedures.

   Name: AEDC / MAT
   Address: MS 9015, Building 1099, 1099 Avenue C, Arnold AFB, TN, 37389
   Phone number: (931) 454-6712

J1.7 Energy Saving Projects

In accordance with Section C.3, Requirement, the following projects have been implemented on the distribution system by the Government for energy conservation purposes.

- None identified.

J1.8 Service Area

In accordance with Section C.4, Service Area, the service area is defined as all areas within the Arnold AFB boundaries.

J1.9 Off-Installation Sites

No off-installation sites are included in the sale of the Arnold AFB electric distribution system.

J1.10 Specific Transition Requirements

In accordance with Section C.13, Transition Plan, **Table 9** provides a listing of transition requirements to be completed by the UP Contractor upon transfer. Transition requirements may include service connections and disconnections, as well as other requirements necessary to support utilities privatization.

TABLE 9
Service Connections and Disconnections
Electric Distribution System, Arnold AFB, TN

No	Location	Description

TABLE 9
Service Connections and Disconnections
Electric Distribution System, Arnold AFB, TN

No	Location	Description
1	ETF 1, ETF 2, ETF 7	Install new isolation points as specified by Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas. They shall include current transformers for metering and transformer differential relay scheme. The transformer differential zone will be moved from the existing switchgear breakers to the new isolating devices. The isolating devices shall be able to interrupt fault current at its point of installation. New relay schemes shall be provided to protect the feeder cables and bus serving the facility switchgear. Install one new station battery bank to supply control power for substation equipment. Control power for the isolating devices shall be served from the new 125VDC station batteries to be installed. The UP Contractor shall modify SCADA equipment as necessary to incorporate new isolation devices.
2	ETF-C Air Side, ETF-C Exhaust, PWT, PES, VKF, SPS, PPS	Install new isolation points as specified by Section J1.12.2, Utility System Points of Demarcation and Restricted Access Areas. They shall include current transformers for metering and transformer differential relay scheme. The transformer differential zone will be moved from the existing switchgear breakers to the new isolating devices. The isolating devices shall be able to interrupt fault current at its point of installation. New relay schemes shall be provided to protect the feeder cables and bus serving the facility switchgear. Install one new station battery bank to supply control power for substation equipment. Control power for the isolating devices shall be served from the new 125VDC station batteries to be installed. The UP Contractor shall modify SCADA equipment as necessary to incorporate new isolation devices.

J1.11 Government Recognized System Deficiencies

Table 10 provides a listing of system improvements that the Government has planned. The Government recognizes these improvement projects as representing current deficiencies associated with the Arnold AFB electric distribution system. If the system is sold, the Government will not accomplish these planned improvements. The UP Contractor shall make a determination as to its actual need to accomplish and the timing of any and all such planned improvements. Capital upgrade projects shall be proposed through the Capital Upgrades and Renewal and Replacement Plan process and will be recovered through Schedule L-3. Renewal and Replacement projects will be recovered through Sub-CLIN AB.

TABLE 10
System Deficiencies
Electric Distribution System, Arnold AFB, TN

No.	Location	Description

TABLE 10
System Deficiencies
Electric Distribution System, Arnold AFB, TN

No.	Location	Description
1	Building 1525 Unit Subs	Replace the existing 500 Kilo-Volt Ampere (KVA), 13.8 Kilo-Volt (KV) - 480 Volt unit substations, 13.8KV primary switch, 500 KVA transformer, and 480 volt secondary switchgear. This unit substation provides low voltage power for the Power Control Building (Facility 1525) which is the primary distribution point of electric power at Arnold AFB. AEDC Project ANZY010083, FY2004.
2	Electrical Distribution System, Rocket Prep Area	Upgrade Electric Distribution System to isolate Rocket Prep Area (RPA) from CKT 28. Route new overhead circuit to RPA. Need to take Circuit 24 to RPA AREA and replace Circuit 28. AEDC Project ANZY030035, FY2004.
3	Electrical Distribution System	Maintain Breakers. Perform 12-year life-cycle maintenance on following high voltage breakers as part of backlogged maintenance items: HVB 924, 934, 984, 3924, 3974. Work will include inspecting, cleaning, and calibrating high voltage breakers and compressors, replacing components of the system recommended by manufacturer or found to be damaged or worn. Work will include touch up painting, final calibration and interrupt testing of the system to insure proper function. AEDC Project ANZY030011, FY2005.
4	Electrical Distribution System, Arnold Village	Replace Arnold Village Power Lines. Upgrade and replace the existing overhead circuit to Arnold Village with a new overhead circuit. The military family housing residents and MWR patrons experience brown outs and power surges caused by the tremendous power demands of the pumps at the primary pumping station as they kick on and off. The existing power lines cannot adequately provide power to all of the facilities connected to them. Preferred solution is to provide power to Arnold Village from the Duck River service line. Initial AEDC discussions with Duck River indicate that this is feasible. AEDC Project ANZY910170, FY2005.
5	Power Control Building	Replace the existing Utility Consol – Mimic Board in the power control building. Phased project - this portion installs a mimic board in the Power Control facility to monitor electrical distribution status of the base. (Part of multi phased utilities consolidation). AEDC Project ANZY990109A, FY2005.
6	Upgrade 13.8KV Switchgear (VCB 20)	Add three (3) new air switches to the 13.8 kv electrical distribution system. These air switches will involve circuits of both CF-1 & CF-2 161kv transformers. AEDC Project ANZY010048, FY2005.
7	Install Sump Pumps in Electrical Manholes	Install sump pumps in 5 manholes around the power control building 1525: 1 in the switchyard area, 3 each across the blast shield slope, and 1 in the communications manhole on the NE of the building. AEDC Project ANZY030032, FY2005.
8	Repair Nitrogen System, Electrical Transformers	Reconfigure nitrogen system on transformers in ASTF, PWT, PES and VKF substation yards. AEDC Project ANZY030034, FY2005.

TABLE 10
System Deficiencies
Electric Distribution System, Arnold AFB, TN

No.	Location	Description
9	Repair SCADA System	Replace the existing electrical Supervisory Control and Data Acquisition system, including RTU's, User Interfaces, and Interface Software. AEDC Project ANZY030036, FY2005.
10	Install Underground Power-MK1	Replace the existing overhead distribution system with all underground equipment. The existing above ground power distribution system has had 51 outages since 1964. There have also been numerous surges and voltage dips that have tripped sensitive equipment. Experience has shown this system to be affected at a rate of ten times that of underground systems. Tests at Mark I often last for a month or more. Power interruptions have caused tests to have to be restarted. This can increase test expenses and impact schedules. Also, expensive equipment such as the GPS Test Vehicle can be seriously damaged by power interruptions. AEDC Project ANZY890270, FY2006.
11	Replace Oil Circuit Breaker 652, PES	Replace OCB 652 with a new device equivalent to the existing, rated 3000 amps and 550kV BIL. AEDC Project ANZY040008, FY2006.
12	Util Consol-Digital Kwh Meters	Replace outmoded meters with current standard digital meters. AEDC Project ANZY990109B, FY2006.
13	Repair lightning protection for the 161 kV Distribution System	Replace lightning arrestors for 161KV distribution system substations and transformers: PWT 1,3,and 4; VKF 1,3, and yard; PES 1,2,3,4,6, and yard; ETF 1, 2, 7, and yard; Main Substation yard. AEDC Project ANZY040011, FY2006.
14	Demo Synchronous Condenser	Remove the existing synchronous condenser and restore the facility to original condition. AEDC Project ANZY940148, FY2009.
15	Replace Existing Pilot Wire System	Replace the existing pilot wire system with a new pilot wire system. AEDC Project ANZY010031, FY2009.
16	Power Distribution Modernization	Replace analog meters with digital remote sensing equipment to provide remote monitoring of the primary distribution system. Update the existing control and sequence of event recording system to one with the capability to time stamp various points and alarms at the substations. Install Fiber Optic Cable and Install backup communication and electrical support at new locations. AEDC Project ANZY013001.
17	Replace Overhead and Underground 13.8kV Equipment	Replace overhead 13.8kV poles, hardware, cutouts, and switches. Replace underground 13.8kV cable.
18	Process oil filled equipment.	There is approximately 300,000 gallons of oil in transformers, 30,000 gallons of oil in circuit breakers, and 200,000 gallons of oil in 161kV oil filled cables. Sustain oil-filled electrical equipment health by processing oil with appropriate equipment. This project is backlogged maintenance work.

TABLE 10
System Deficiencies
Electric Distribution System, Arnold AFB, TN

No.	Location	Description
19	Replace Underground oil filled 161kV Cables	Replace approximately 12,736 feet of 161kV oil-filled cable in eight separate circuits that were installed in the 1950's.
20	Refurbish oil filled transformers	There are ten 161kV transformers that need to be upgraded. Additionally, the transformers' ancillary equipment needs maintenance. Sustain oil-filled transformer health by re-gasketing, re-furbishing controls, painting, and other items to meet current requirements.
21	Modify ETF-A and B Plant Electrical Power Distribution System	The PC&S program has been tasked with reducing facility maintenance needs by consolidating the ETF process air system to a single plant (C-plant) while upgrading capability and streamlining processes to reduce test costs. The program will focus on the overall ETF as a system, while implementing improvements through three major blocks of work: Consolidate plant process air operations to the ETF C-plant. Improve test cell capability to meet future needs. Reduce cost of providing test services. In order to meet the consolidation and cost reduction goals of the PC&S Program, the ETF-A and B plants are scheduled to shut down and remove their air supply, refrigeration and exhaust equipment from service. The ETF-C plant will provide the air supply and exhaust for these facilities in the future.
22	Electric Distribution System	The existing transformers and oil storage containers of 55 gallons or larger capacity, including piping, in the Electrical Distribution System do not individually meet the Spill Prevention Control and Countermeasure requirements of the Oil Control Act. The UP Contractor will be required to develop a compliant Spill Prevention Control and Countermeasure plan in accordance with the provisions of this regulation.

J1.12 Right of Access to the Utility System

J1.12.1 Map of the Utility System

Maps from the Base Comprehensive Plan or other drawings show the known locations of the utility system and are available at the Base Civil Engineering Office. Portions of the utility system may not be fully shown on the map or maps. Any such failure to show the complete utility system on the map or maps shall not be interpreted as that part of the utility system being outside the Installation. The Installation is co-extensive with the entire linear extent of the utility system sold to Grantee, whether or not precisely shown on the map or maps.

TABLE 11
Drawings
Electric Distribution System, Arnold AFB, TN

Qty	Item	Description	Remarks
	Various	See Bidders' Library for Maps, Drawings and Records to be included with the system to be	

privatized

J1.12.2 General Description of the Utility System, Lateral Extent of the Right-of-Way, and Points of Demarcation

J1.12.2.1 Utility System Description

The utility system may be composed of, without limitation, substations with outdoor switchgear, overhead and underground conductors, utility poles, ducts, raceways, manholes, pad-mount and pole-mount transformers, transformer pads, meters, and instrumentation related to metering of electricity delivered to end users on the Installation.

J1.12.2.2 Lateral Extent of Utility System Right-Of-Way:

Where the utility system is installed above ground, 26-feet-wide, extending 13 feet on each side of the utility system, as installed.

Where the utility system is installed on or under the ground, 26-feet-wide, extending 13 feet on each side of the utility system, as installed.

J1.12.2.3 Utility System Points of Demarcation

The point of demarcation is defined as the point on the utility system where ownership changes from the utility system owner to the facility owner. This point of demarcation will typically be at the point the utility enters a facility or the load side of a transformer within a facility. **Table 12** identifies the type and general location of the point of demarcation with respect to the facility for each scenario.

TABLE 12
General Points of Demarcation
Electric Distribution System, Arnold AFB, TN

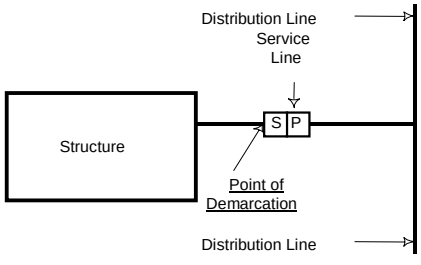
Point of Demarcation (POD)	Applicable Scenario	Sketch
POD is the transformer secondary terminal spade.	Pad Mounted Transformer located outside of structure with underground service to the structure and no meter exists.	

TABLE 12
General Points of Demarcation
Electric Distribution System, Arnold AFB, TN

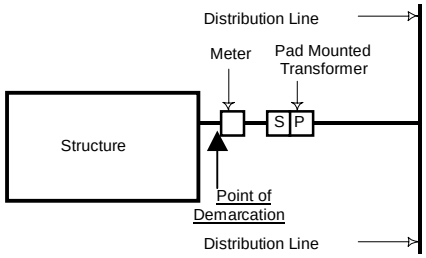
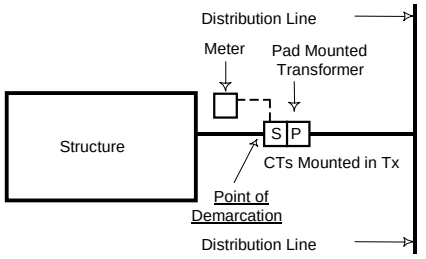
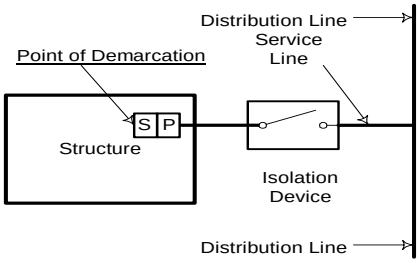
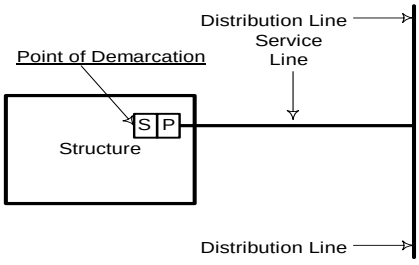
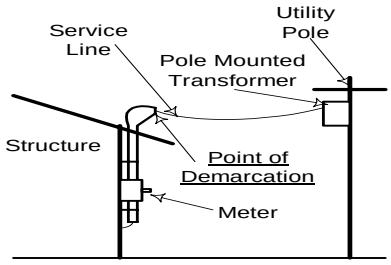
Point of Demarcation (POD)	Applicable Scenario	Sketch
POD is load side of the meter.	Residential service (less than 200 amps and 240V 1-Phase), and three phase self contained meter installations. Electric meter exists on or within five feet of the exterior of the building on an underground secondary line.	
POD is the transformer secondary terminal spade.	Three Phase CT metered service. Note: The meter, can, CTs, and associated wires are owned and maintained by the electric utility owner.	
POD is secondary terminal of the transformer inside of the structure.	Transformer located inside of structure and an isolation device is in place with or without a meter. Note: Utility owner must be granted 24-hour access to transformer room.	
POD is secondary terminal of the transformer inside of the structure.	Transformer located inside of structure with no isolation device in place. Note: Utility Owner must be granted 24-hour access to transformer room.	
POD is where the overhead conductor is connected to the weatherhead.	Electric meter is connected to the exterior of the building on an overhead secondary line. Note: The meter and meter can, though beyond the POD, are owned and maintained by the utility owner.	

TABLE 12
General Points of Demarcation
Electric Distribution System, Arnold AFB, TN

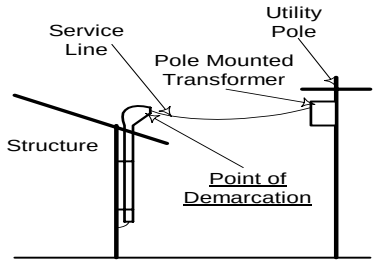
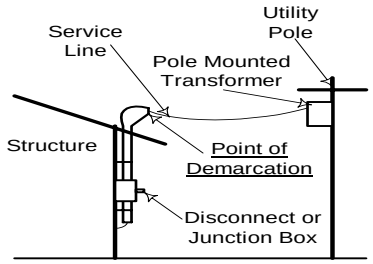
Point of Demarcation (POD)	Applicable Scenario	Sketch
POD is where the overhead conductor is connected to the weatherhead.	Pole Mounted Transformer located outside of structure with secondary attached to outside of structure with no meter.	
POD is where the overhead conductor is connected to the weatherhead.	A disconnect switch or junction box is mounted to the exterior of the structure with no meter.	
POD is at the overhead service line's connection to the service entrance mast. *Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter and the can. The POD for the electric meter is at the water utility owner's conductors to the electric utility owner's conductors. This meter POD applies regardless of the location of the electric utility owner's meter. The water utility owner owns the service entrance mast.*	Electric power is provided to a water facility via an <u>overhead</u> service drop. This configuration could be found at facilities dedicated to the water utility such as a water well, pump station, or water tower.	None

TABLE 12
General Points of Demarcation
Electric Distribution System, Arnold AFB, TN

Point of Demarcation (POD)	Applicable Scenario	Sketch
POD is at the transformer secondary terminal spade. *Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter and the can. The POD for the meter is at the water utility owner's conductors to the electric utility owner's conductors. This meter POD applies regardless of the location of the electric meters and transformers.*	Electric power is provided to a water facility via an underground service connection. This configuration could be found at facilities dedicated to the water utility such as a water well, pump station, or water tower.	None
POD is at the overhead service line's connection to the service entrance mast. *Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter and the can. The POD for the electric meter is at the wastewater utility owner's conductors to the electric utility owner's conductors. This meter POD applies regardless of the location of the electric utility owner's meter. The wastewater utility owner owns the service entrance mast.*	Electric power is provided to a wastewater facility via an overhead service drop. This configuration could be found at facilities dedicated to the wastewater utility such as a lift station or wastewater treatment plant.	None

TABLE 12
General Points of Demarcation
Electric Distribution System, Arnold AFB, TN

Point of Demarcation (POD)	Applicable Scenario	Sketch
POD is at the transformer secondary terminal spade treatment plant. *Note: If an electric meter is present, or is to be installed, the owner of the electric distribution system on the installation is the owner and maintainer of the electric meter and the can. The POD for the meter is at the wastewater utility owner's conductors to the electric utility owner's conductors. This meter POD applies regardless of the location of the electric meters and transformers.*	Electric power is provided to a wastewater facility via an underground service connection. This configuration could be found at facilities dedicated to the wastewater utility such as a lift station or wastewater treatment plant.	None

Table 13 lists anomalous points of demarcation that do not fit any of the above scenarios. These anomalous or unique points of demarcation shall take precedence over the general points of demarcation shown in Table 12.

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

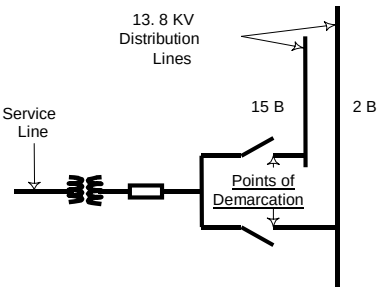
Building No.	Point of Demarcation	Sketch
13.8 KV power for the following structures: BCE; Model Shop Unit Subs 1, 2, 3; VKF Unit Subs 2, 3, 4, 7, 8, 9, 10; Main Cafe; FP&C; J4 Unit Sub 1; J5; J6 Unit Subs 1A, 1B, 2A, 2B, 3, 4; ETF Shop; ETF Unit Subs 5, 6, 7, 13; PWT Unit Subs 4, 5, 6, 8; EAF Unit Subs A, B; ASTF Unit Subs 1, 2A, 2B, 2C, 3, 4, Warehouse No.1, and PES Unit Sub 14.	Point of demarcation is the line side of the disconnect switches on the Unit Sub.	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

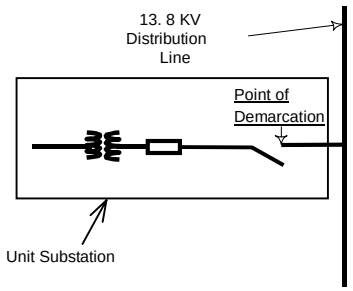
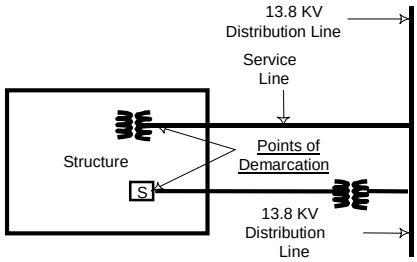
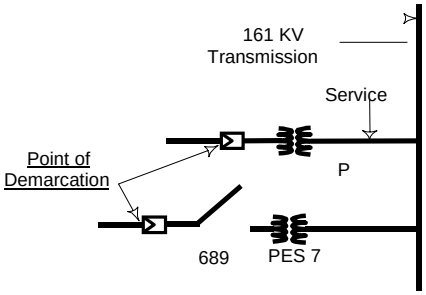
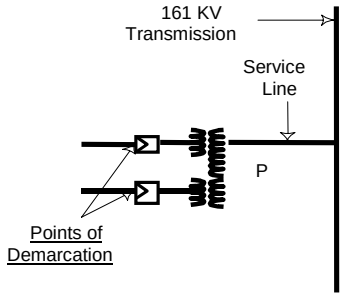
Building No.	Point of Demarcation	Sketch
13.8 KV power for the following structures: Building 1525, Power Control Building.	Point of demarcation is the line side of the primary disconnect switch on the Unit Sub.	
13.8 KV power for the following structures: A&E.	Points of demarcation are the line side of the primary switch on the Unit Sub and the line side of the secondary breaker.	
161 KV power for the following Transformers: PES 2, 6 and 7.	Points of demarcation are the load side of the isolation devices. *Note: UP Contractor shall install new isolation devices required for privatization.*	
161 KV power for the following transformers: ETF C Airside 1,2,3; ETF C Exhaust 2, 3, 4, 5; ETF 2, 5; PWT 1; PES 1, 4; and VKF 1, 2, 3. *Note: VKF ring bus tied by reactors, see sheet LD 105.*	Points of demarcation are the load side of the isolation devices. *Note: UP Contractor shall install new isolation devices required for privatization.*	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

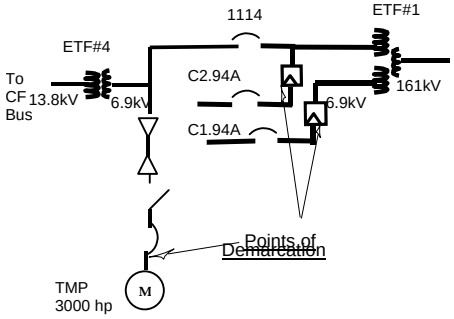
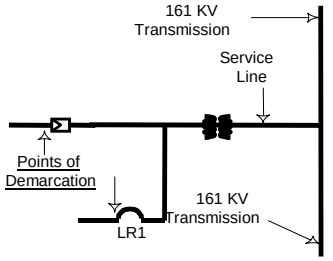
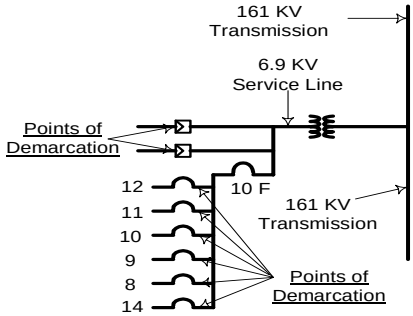
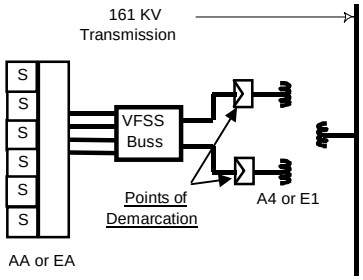
Building No.	Point of Demarcation	Sketch
161kV power for ETF 1 and 4.	Points of demarcation are the load side of the isolation device and OCB 504.	
13.8 KV power for the following transformer: ETF 6.	Points of demarcation are the load side of LR1 and the load side of new isolation device. *Note: UP Contractor shall install new isolation device required for privatization.*	
161 KV power for the following structures: ETF 7, Unit Substations - 8, 9, 10, 11, 12, & 14.	Points of demarcation are the line side of the first cable connection on Unit Sub and the load side of new isolation devices. *Note: UP Contractor shall install new isolation devices required for privatization.*	
161 KV power for the following transformers: ETF C AA and A4 or EA and E1	Point of demarcation is the load side of the isolation device. *Note: UP Contractor shall install new isolation devices required for privatization. UP Contractor shall grant access into switchyard for maintenance of Unit Subs AA and AE.*	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

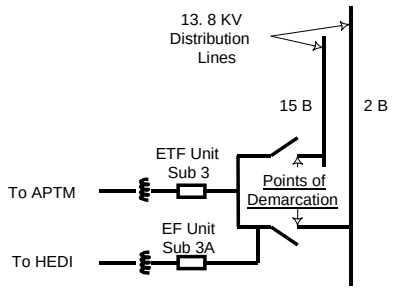
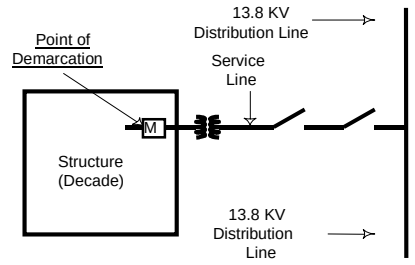
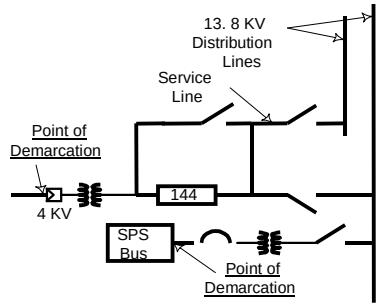
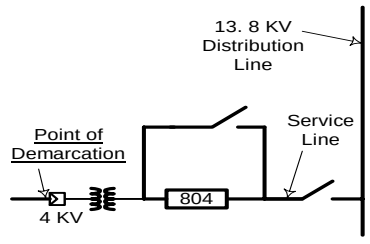
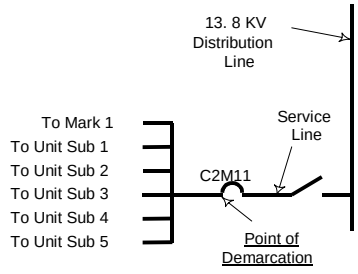
Building No.	Point of Demarcation	Sketch
13.8 KV power for the following unit substations: APTU and HEDI or ETF Unit Sub 3 and 3A.	Point of demarcation is the line side of the disconnect switches on the Unit Sub.	
13.8 KV power for Decade.	Point of demarcation is the load side of the meter located within the structure.	
13.8 KV power for SPS No.1 and SPS No.2.	Points of demarcation are the load side of the isolation device and line side of the bus gear in SPS No. 2. Note: UP Contractor shall install new isolation devices required for privatization.	
13.8 KV power for the following structures: PPS.	Point of demarcation is the load side of the isolation device. Note: UP Contractor shall install new isolation devices required for privatization.	
13.8 KV power for the following structures: Mark 1.	Point of demarcation is the load side of breaker C2M11.	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

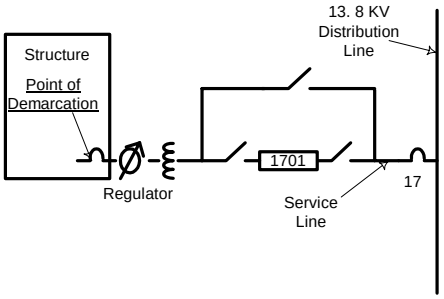
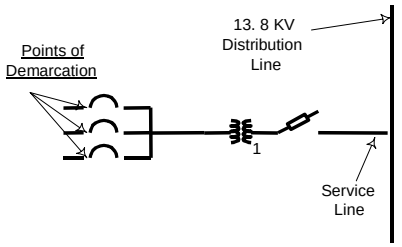
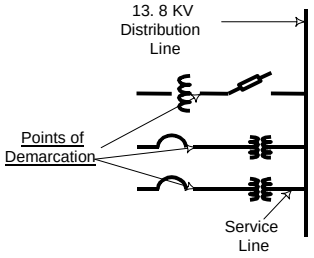
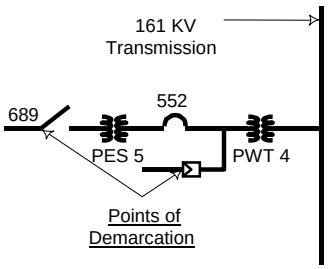
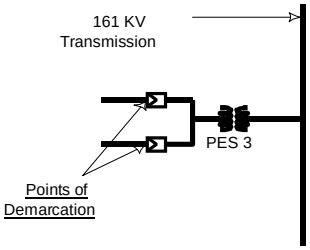
Building No.	Point of Demarcation	Sketch
13.8 KV power for the following structures: Rowland Creek Pump Station.	Point of demarcation is the load side of the main circuit breaker.	
13.8 KV power for the following structures: OOM (ALC).	The point of demarcation is the secondary of the feeder breaker.	
13.8 KV power for the following structures: Airstrip Facilities.	Points of demarcation are the line side of disconnect switch or line side of the main panel.	
161 KV power for the following transformers: PWT 4 and PES 5.	Points of demarcation are the load side of PES 5 and the load side of the isolation device. Note: UP Contractor shall install new isolation devices required for privatization. PES 5 currently has no connected load and the sketch represents an alternate feed scenario which shows the possibility of connecting PES 5 to disconnect switch 689.	
161 KV power for the following transformer: PES 3.	Point of demarcation is the load side of the isolation device. Note: UP Contractor shall install new isolation devices required for privatization.	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

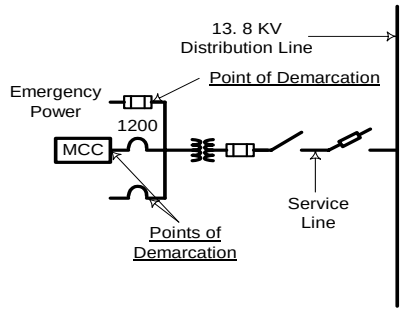
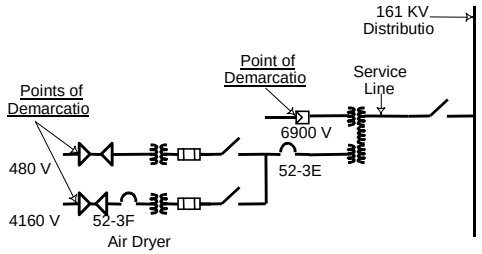
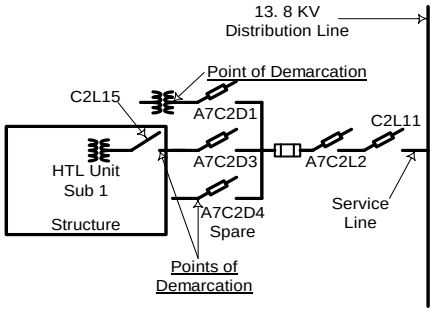
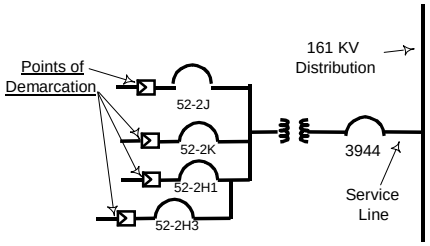
Building No.	Point of Demarcation	Sketch
13.8 KV power for the following: PMEL Unit Substation.	Points of demarcation are the line side of the MCC and line side of the fuse.	
161 KV power for the following: PWT Transformer 3.	Points of demarcation are the load side of the isolation device and load side of the feeder cable. Note: UP Contractor shall install new isolation devices required for privatization.	
13.8 KV power for the HTL Unit Sub 1.	Points of demarcation are the line side of the transformer, line side of disconnect switch C2L15, and load side of disconnect switch A7C2D4.	
161 KV power for the following transformers: PWT 2 and PWT 5.	The point of demarcation is the load side of the isolation device. Note: Contractor shall install new isolation devices required for privatization.	
ASTF Exhaust Transformer No. 6.	The point of demarcation is the line side of the Unit Sub disconnect switches and the line side of breakers E6A1-01, E6A2-01, E6B1-01, and E6B2-01. See drawings LD 179 and LD 182.	None

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

Building No.	Point of Demarcation	Sketch
Street lighting, parking lighting, security lighting, and Ball Field lighting fed directly from the distribution system.	All street lighting, parking lighting, security lighting, and ball field lights fed directly from the distribution system are included in the purchase of the utility. *Note: All traffic, street, recreational, parking, and security lighting fed from buildings is not included with the privatized system.*	None
Cable TV amplifiers fed directly from transformers.	For connections from the electric distribution system to Cable TV amplifiers, the cable service provider and the privatization UP Contractor will establish the points of demarcation.	None
Emergency Warning Sirens fed directly from transformers.	The point of demarcation for Emergency Warning Sirens will be the disconnect switch closest to the siren. Sirens will be owned and maintained by AEDC.	None
Cathodic protection rectifiers fed from transformers.	The point of demarcation for cathodic protection rectifiers will be the disconnect switch closest to the rectifier. Rectifiers will be owned and maintained by others.	None
Cathodic protection rectifiers fed from buildings.	The beginning point of demarcation is the main panel in the building. The ending point of demarcation will be the disconnect switch closest to the rectifier. Rectifiers will be owned and maintained by others. *Note: Disconnect switch may be installed at any time. Disconnect switch will become the point of demarcation.*	None
Water Tower	The point of demarcation for electricity supplied to the Water Tower is the line side of the main panel for the water tower.	None

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

Building No.	Point of Demarcation	Sketch
Water Treatment Plant	The point of demarcation for electricity supplied to the Water Treatment Plant is the line side of the disconnect switch closest to the structure or the main panel if there is no disconnect switch.	None
Main Wastewater Treatment Plant	The point of demarcation for electricity supplied to the Main Wastewater Treatment Plant is the line side of the disconnect switch closest to the structure or the line side of the main panel if there is no disconnect switch.	None
Arnold Village Wastewater Treatment Plant	The point of demarcation for electricity supplied to the Arnold Village Wastewater Treatment Plant is the line side of the disconnect switch or main panel.	None
Sanitary Sewer Lift Stations	The point of demarcation for electricity supplied to the lift stations is the line side of the control panel for each lift station.	None
TVA Supply to Arnold AFB	The point of demarcation is where the TVA transmission cable connects to the Main Switch yard on Arnold AFB.	None
TUB and Duck River supply to Arnold AFB	The beginning point of demarcation is the load side of the utility provider's meter. The ending point of demarcation is in accordance with the applicable scenario above.	None
Meters	The Government reserves the right to access the UP Contractor's meters. The point of demarcation for communication equipment attached to the UP Contractor's meters is the point where the Government's communication lines attach to the meter.	None
—⊡	Isolation Device	
≋	Transformer	

TABLE 13
Unique Points of Demarcation
Electric Distribution System, Arnold AFB, TN

Building No.	Point of Demarcation	Sketch
	Switch	
	Fuse	
	Circuit Breaker	
	Electric Meter	
	Voltage Regulator	

For the areas identified in **Table 14**, Arnold AFB shall not grant any additional easements, rights-of-way, leases, permits, licenses, or other access. Arnold AFB recognizes that these areas require restricted access and the UP Contractor may take appropriate action to prevent unauthorized access to such areas. This only applies to access by others than the UP Contractor and will not limit any right of access by public authorities charged with the regulation of UP Contractor's activities or law enforcement.

TABLE 14
Restricted Access Areas
Electric Distribution System, Arnold AFB, TN

Description	Facility #	Tennessee State Plane Coordinates (FT)	Other Information
Main Substation	1524	LL = E1,952,620, N380,390 LR = E1,953,070, N380,280 TR = E1,953,100, N380,410 TL = E1,952,650, N380,520	Located SW of the Power Control Bldg (1525)
VKF Substation	650	LL =E1,954,380, N381,820 LR = E1,944,560, N381,780 TR = E1,954,590, N381,890 TL = E1,954,410, N381,930	Located on South side of the VKF Compressor Bldg (651)
PWT Substation	732	LL = E1,955,330, N381,250 LR = E1,955,550, N381,190 TR = E1,955,570, N381,260 TL = E1,955,350, N381,320	Located north of the PWT Motor Drive Bldg (780)
ETF #1 Substation	888	LL = E1,953,970, N380,970 LR = E1,954,050, N380,950 TR = E1,954,110, N381,190 TL = E1,954,030, N381,210	Located West of the ETF AC&T Bldg (878)

TABLE 14
Restricted Access Areas
Electric Distribution System, Arnold AFB, TN

Description	Facility #	Tennessee State Plane Coordinates (FT)	Other Information
ETF #2 Substation	831	LL = E1,954,700, N380,860 LR = E1,954,830, N380,820 TR = E1,954,870, N380,940 TL = E1,954,740, N380,980	Located East of the ETF Exhauster Bldg-B side (879) and West of the PWT Desiccant Drier Bldg (784)
ETF #7 Substation	883	LL = E1,954,900, N381,240 LR = E1,954,960, N381,220 TR = E1,954,980, N381,300 TL = E1,954,920, N381,320	Located east of the ETF-A Exhauster Bldg (882)
SPS Substation	1509 and 1510	LL = E1,952,750, N379,300 LR = E1,952,780, N379,290 TR = E1,952,820, N379,430 TL = E1,952,790, N379,440	Located west of the Secondary Pumping Station Bldg (1507)
PPS Substation	3040	LL = E1,949,320, N360,380 LR = E1,949,350, N360,360 TR = E1,949,390, N360,390 TL = E1,949,360, N360,410	Located north of the Primary Pumping Station Bldg (3038)
RCPS Substation	1549	LL = E1,951,120, N378,110 LR = E1,951,160, N378,110 TR = E1,951,170, N378,160 TL = E1,951,130, 378,160	Located directly north of the Control Bldg and east of the Pump Back Station
Pilot Wire Rooms	1525 Power Control 720 PES 780 PWT 651 VKF 879 ATF 2 and 7 878 ATF No. 1 903 ASTF Air Side 930 ASTF Exhaust Side		The pilot wire rooms at each 161kV substation will belong to the UP Contractor. This includes all control wires from substations to pilot wire rooms including SCADA equipment. SCADA will require modification to include new isolating devices.

TABLE 14
Restricted Access Areas
Electric Distribution System, Arnold AFB, TN

Description	Facility #	Tennessee State Plane Coordinates (FT)	Other Information
Power Control Building	1525	LL = E1,953,140, N380,440 LR = E1,953,220, N380,420 TR = E1,953,280, N380,580 TL = E1,953,200, N380,600	Located south of the SL2 & SL3 Large Engine Environmental Test Fac. (541)The UP Contractor's area of restricted access is limited to the cable vault located in the basement on the northwest corner of the building. The UP Contractor shall have joint-use of the Main Control Room, except for the area partitioned off for the Base EMCS, and the Battery and Cable Tray Room, located in the basement directly below the Main Control Room. See Section J1.3.10, Joint-Use Requirements.
ASTF Exhaust		LL = E1,955,100, N379,970 LR = E1,955,360, N379,900 TR = E1,955,380, N379,990 TL = E1,955,120, N380,060	Located directly north of the ETF-C Exhauster Bldg (903). The UP Contractor shall have joint use of ASTF Exhaust substation.
ASTF Air		LL = E1,953,720, N380,030 LR = E1,953,830, N380,000 TR = E1,953,890, N380,250 TL = E1,953,780, N380,280	Located directly west of the ETF-C Air Supply Bldg (929). The UP Contractor shall have joint use of ASTF Exhaust substation.

Coordinates are the lower left (LL) lower right (LR), top left (TR), and top left (TL) corners of the structures. All coordinates reference the Tennessee State Plane coordinate system NAD83, feet.

J1.12.3 Environmental Baseline Survey

The Air Force has determined that it is not required to conduct an EBS in regard to the sale of this utility system.